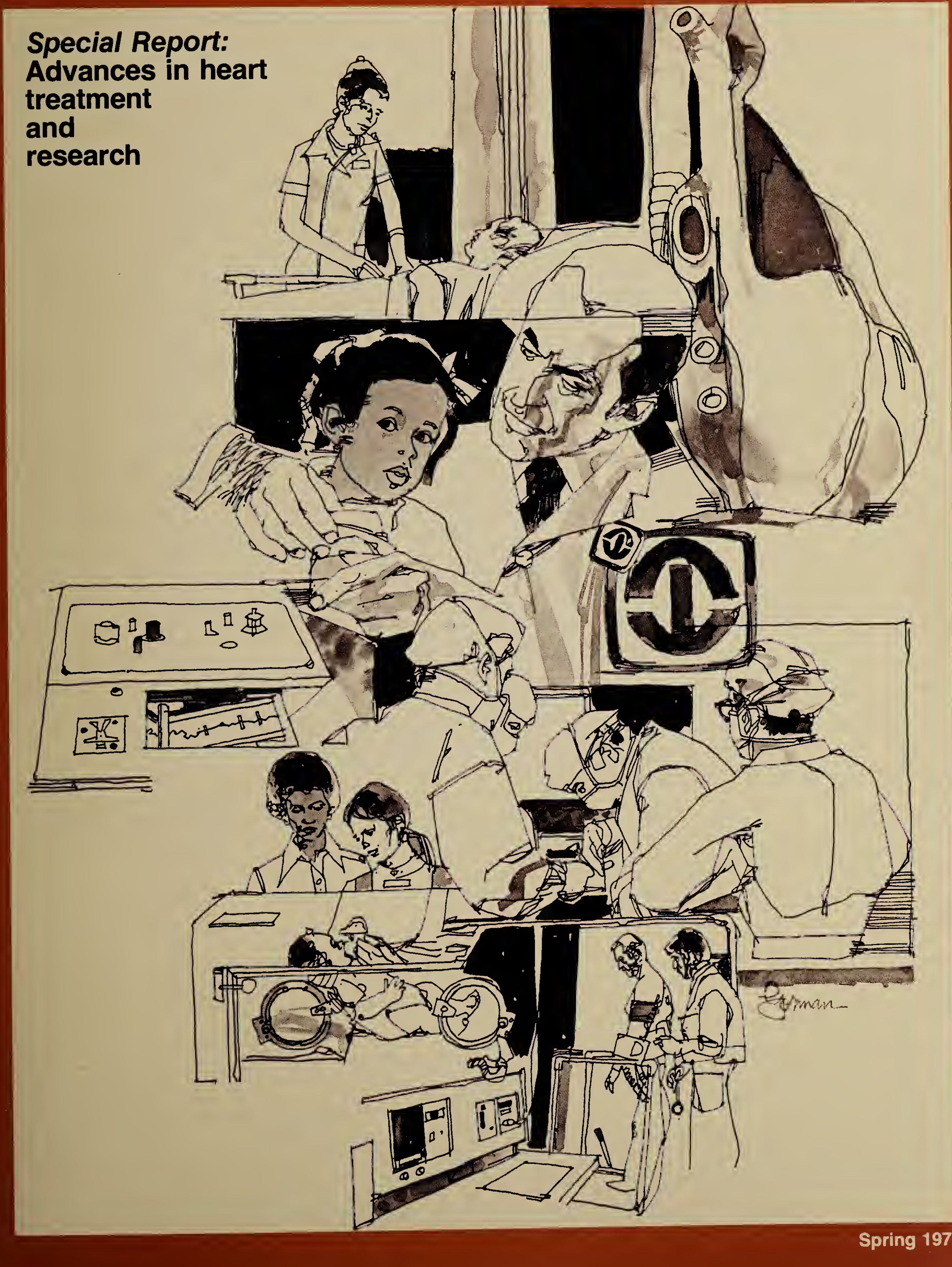
Rush-Presbyterian-St. Luke's Medical Center

The Magazine

Special Report:
Advances in heart treatment and research



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The Heart

The past few decades have seen an explosion of knowledge about the heart and how it works. Many of the diagnostic and therapeutic procedures that we consider routine today were unknown 30, 20, even 10 years ago.

By Helen Frank Bensimon

The pain is spreading over the center and left side of the chest.

It is a tight, heavy, oppressive, grabbing, squeezing pain. It radiates up into the neck and jaw. It radiates down into the left arm. Cold sweat covers the brow and the face, which has turned an ashen grey color. There is weakness, nausea, breathing seems almost impossible. This is a myocardial infarction. In plain English, a heart attack. It will happen to more than 1,000,000 Americans this year. It may come upon them suddenly, or it may come upon them slowly, over a period of time, with plenty of advance warning pains.

Most of the heart attack victims — about 85 per cent — will survive the experience, albeit with damage to their heart that may to a greater or lesser degree impair the quality of their lives and their ability to do their jobs.

There are many factors that combine to set into motion the complex process that culminates in a heart attack.

The normal heart is a hollow muscular pump just a little larger than a fist. It is divided into four chambers. Blood is pumped through these chambers, aided by a series of one-way valves that open and close to allow its progress. Dark venous blood, low in oxygen, returns to the heart through veins and enters the right atrium, or upper chamber. From there it empties into the right ventricle, or lower chamber, through the three-pronged tricuspid valve.

The right ventricle drives the blood under low pressure through the pulmonary valves and the pulmonary artery to the lungs, where the blood receives oxygen. The oxygenated blood, now bright red, returns to the heart through the pulmonary veins to the left atrium. It then passes through the mitral valve to the left ventricle. The oxygenated blood is pumped out through the aortic valve into the aorta to flow with the body's general circulation.

The heart muscle does not get its oxygen from the blood passing through it but from the coronary arteries, which open off the aorta just beyond the aortic valve. When there is a discrepancy between the demand of the heart muscle for oxygen and the amount of oxygenated blood the coronary arteries can convey, the oxygen debit causes biochemical changes that precipitate pain. Inadequate blood flow is usually caused when the coronary arteries through which the blood moves to the heart become clogged by plaques of fatty deposits. Fats, including cholesterol, that circulate in the blood stream and normally would pass through the vessel walls as nutrients, instead begin to build up in these arteries. They invade the vessels' fragile inner layer (intima) and cause the arterial wall to thicken, thereby narrowing the passage through which the blood flows. This is called atherosclerosis. It may cause a squeezing pain or discomfort called angina beneath the breastbone as areas of the myocardium (the thickest layer of the heart wall, composed of muscle) become temporarily starved for oxygen during exercise or emotional stress. Atherosclerosis may be progressive until outright blood vessel blockage or occlusion occurs, resulting in infarction (or death) of some heart muscle.

When an area of heart muscle has no irrigation by oxygenated blood because of a blocked or markedly narrowed coronary artery, that area of heart muscle stops contracting and dies. The patient may die if the entire heart stops. If only part of the heart muscle is affected, the heart may continue to beat and the patient experiences a myocardial infarction, or heart attack. If a large amount of heart muscle is involved, the heart may not be able to pump adequate amounts of blood and heart failure develops.

While there is no one single factor that leads to the pathologic changes that bring about a heart attack, over the years physicians and scientists have identified a number of risk factors that greatly increase the danger of heart attack. That doesn't mean that someone who has none of these risk factors is guaranteed never to have a heart attack. Nor does it mean that someone who has several or all of them definitely will have a heart attack. It means that people who have several risk factors should be more careful and should, if at all possible, try to eliminate these risk factors from their lives. Some, such as a family history of heart attacks at an early

A patient undergoes cardiac catheterization.

✓

age, can't be changed. However, public awareness and control of the risk factors that can be controlled—cigarette smoking, high cholesterol intake, high blood pressure, diabetes, lack of exercise, and stress—have resulted in a 13.2 per cent drop in the death rate from cardiovascular disease between 1970 and 1975, according to the National Heart, Lung and Blood Institute of the National Institutes of Health.

Nevertheless, one-third of all deaths in this country still are caused by heart attacks.

The past few decades have seen an explosion of knowledge about the heart and how it works. Many of the diagnostic and therapeutic procedures that we consider routine today were unknown 30, 20, even 10 years ago. Each year sees new advances. Thousands of children with congenital heart malformations who would not have survived more than a few days a decade or two ago, can have the malformation repaired and live normal, healthy lives. Coronary bypass surgery to prevent further heart attacks is a routine operation, yet only 10 years ago it was an experimental procedure done in only a few medical centers. Twenty years ago pacemakers were virtually unknown. Today, hundreds of thousands of Americans have tiny metal pacemakers implanted to maintain their heart beat. More precise diagnostic procedures are being developed all the time, as are new techniques to improve medical management of heart disease patients, particularly emergency care and intensive care immediately after a heart attack. Perhaps most important is a new consciousness among the public about some of the risk factors that have been identified in an effort to prevent heart attacks.

Rush-Presbyterian-St. Luke's Medical Center long has been one of the Midwest's leading centers for heart disease research and treatment. Today, more heart patients are treated and more heart operations are performed at the Medical Center than in any other hospital in the Chicago area.

One of the major breakthroughs of the 20th Century in the understanding of coronary heart disease was made at Rush Medical College and Presbyterian Hospital in 1912 by James B. Herrick, M.D. Dr. Herrick defined coronary artery disease for the first time, and was the first person to demonstrate the connection between the clinical condition of myocardial infarction and the condition of coronary occlusion.

In 1947, a young cardiologist named James A. Campbell, M.D., came to Presbyterian Hospital to establish a laboratory where a revolutionary new process called cardiac catheterization, developed during World War II, would be performed. In this procedure, a thin tube called a catheter is inserted under local anesthesia into an arm or leg vein. While the physician watches by special x-ray technique, the catheter is slowly advanced through the vein until it reaches the inside of the heart. By doing this, the physician can learn more about the nature of a heart defect by taking blood samples and measuring blood pressures through the tube or by injecting a nontoxic dye into the circulation and recording its progress through the heart and blood vessels. The ability to perform catheterizations made possible a diagnostic precision never before achieved in the study of heart disease.

But when Dr. Campbell came to Presbyterian Hospital and performed the first cardiac catheterization in the city of Chicago, his colleagues were more than a little skeptical. They permitted him to perform catheterizations in the old x-ray department on the sixth floor of the Murdock Building, the same room where chest x-rays were taken. He couldn't begin any procedures until all the clinic patients' chest films had been completed. Since there was no catheterization equipment anywhere in Chicago, he brought his own. The Department of Surgery, wary of a nonsurgeon using an invasive technique, assigned its chief resident to keep an eye on him during catheterizations.

"But after a while we won them all over," Dr. Campbell recalled.

"We were able to diagnose heart problems more precisely than they ever had been diagnosed before. And that was good for patients. Around this place patients come first, so catheterizations were accepted."

At an annual Herrick lecture, a fellow physician introduced Dr. Campbell in the following way: "The modern era of cardiology began in Chicago in the late 1940s when Dr. Campbell introduced cardiac catheterization at Presbyterian Hospital. Everthing else came from this because it resulted in sufficiently precise diagnoses to make possible the development of the corrective surgical procedures that we take for granted today."

Dr. Campbell also introduced the use of catheters for a wide variety of other diagnostic and treatment procedures. In 1949 he performed the city's first renal dialysis, and some time later injected nitrogen mustard into cancer sites for the first time.

Dr. Campbell left in 1951 to become Dean of the Albany Medical

Some risk factors can be controlled, such as cigarette smoking, high cholesterol intake, high blood pressure, diabetes, lack of exercise, and stress.

College, then returned in 1953 to become Chairman of the Department of Medicine at Presbyterian Hospital. One of the first things he did was to establish a Section of Cardio-Respiratory Diseases.

To head the Section, he invited John S. Graettinger, M.D., a cardiologist who had trained with him at Harvard.

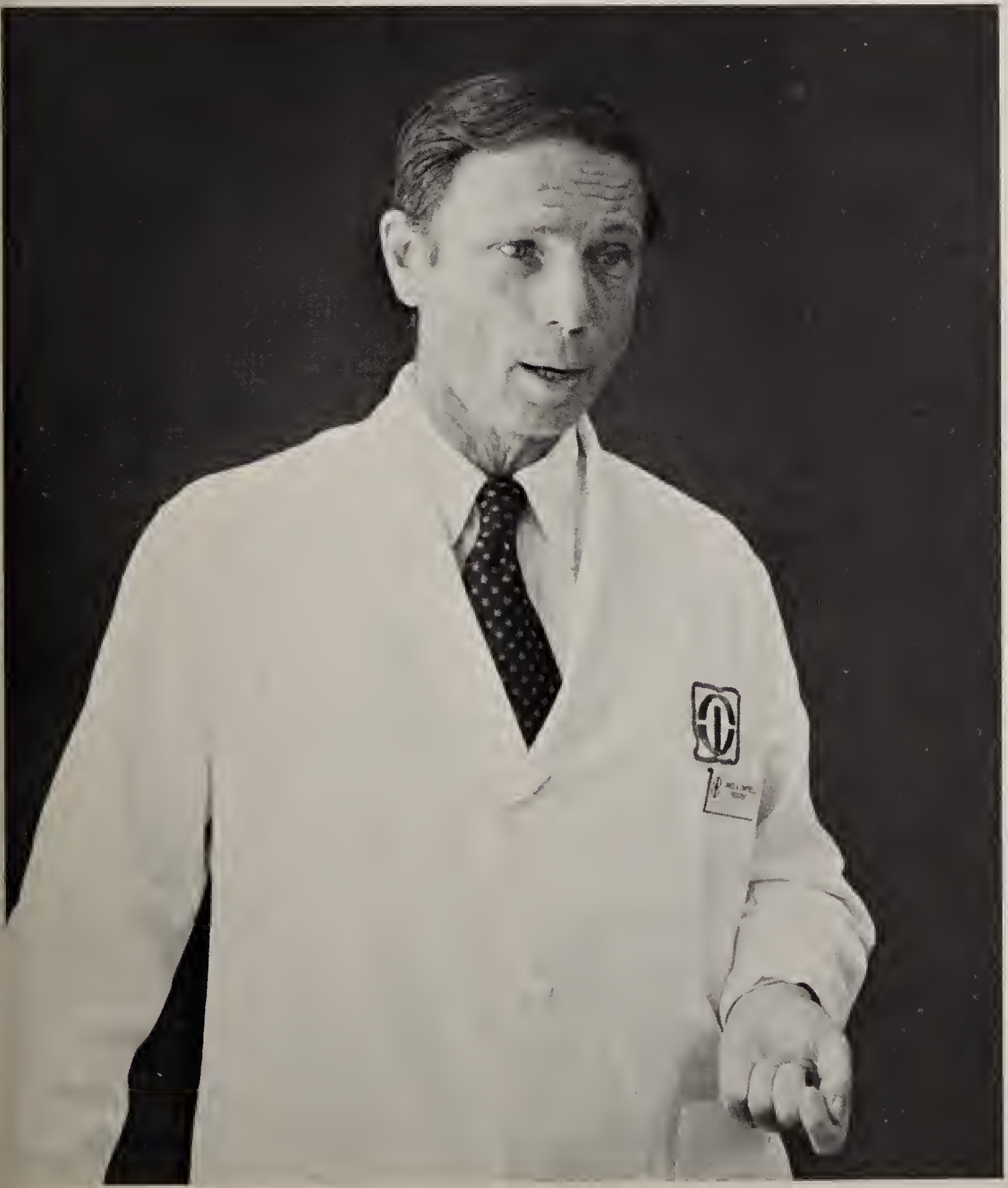
"From that time, the pattern was set for the next several decades," said Dr. Graettinger, who is now Dean of Faculty Affairs and Director of Graduate and Continuing Medical Education.

"Specialist physicians were brought in to help make diagnoses and provide treatment with the new technologies instead of just introducing the technologies *per se.* The growth of the Department of Medicine, and particularly the Section of Cardiology, stemmed from that concept."

It was a time of immense accomplishment. Scores of significant clinical studies were produced in the Section, most of them joint efforts by Dr. Graettinger, Dr. Campbell, Joseph J. Muenster, M.D., Associate Professor of Medicine, who came in 1954 as the first postgraduate Fellow in the Section, and Richard A. Carleton, M.D., who succeeded Dr. Graettinger and headed the Section until 1972. The studies defined more precisely than ever before how the heart and circulation work in health and disease; provided some of the first measurements of the dynamics of circulation; and studied the effects of various environmental influences on the new cardiac pacemakers.

"The essence of first-rate clinical investigation is taking excellent care of patients but at the same time trying to understand and learn from every little thing that's going on, making observations that can be generally useful for patients to come," Dr. Graettinger said.

With the merger of Presbyterian and St. Luke's Hospitals in 1956, the Section expanded and has continued to grow tremendously in size and scope. Dr. Campbell became President of the Medical Center in 1964. Today, the Section of Cardiology is headed by Joseph V. Messer, M.D., Professor of Medicine, who came to the Medical Center in 1973 from the faculties of Tufts, Harvard, and Boston universities in Boston, Mass., where he was Chief of Cardiology at the Boston City Hospital. Like most of his predecessors in the Section, he is a graduate of Harvard Medical School and trained in the Harvard-affiliated hospitals of Boston. Dr. Messer is deeply concerned about the need for ambulatory care programs for post-



James A. Campbell, M.D.

Francois Booyse, Ph.D., in Biochemistry lab.

myocardial infarction and other cardiac patients and for formal detection, rehabilitation, and prevention programs.

"In the hospital, we see only the tip of the iceberg as far as cardiac patients are concerned," he said. "Most cardiac patients aren't cared for in the hospital."

The program he is planning, to be called the Cardiovascular Health Maintenance Program, would be a unit in the Section of Cardiology with a two-fold purpose. At one level it would be aimed at people who never have had a heart attack, who are basically well but who are concerned about their cardiac health. These people would be examined to detect unappreciated cardiovascular disease and to develop a cardiac risk profile and appropriate preventive programs.

On another level, the program would offer follow-up for people who have heart problems or who have suffered a heart attack or undergone heart surgery. It would be interdisciplinary, involving Cardiology, Preventive Medicine, and Social Service, and would offer physical rehabilitation, a nutrition program, a smoking withdrawal clinic, and patient and family education. The critical problem of employment after myocardial infarction and cardiac surgery also would be addressed.

"We as physicians can't serve as employment or vocational rehabilitation agencies for our cardiac patients," said Dr. Messer. "We must leave that to appropriate social agencies in the community. What we can and should do, however, is help these agencies by giving them precise evaluations of how much physical exertion an individual can handle. We are in a position to measure precisely what a person can and can't do."

Dr. Messer also believes that the Cardiovascular Health Maintenance Program would be very useful as a training center for medical students and residents because they would be exposed to a much larger proportion of ambulatory cardiac patients than they see now. He feels that, since Rush is such a renowned tertiary care center, the educational experience is skewed to caring for the acutely ill, hospitalized cardiac patient. Students do not get enough experience with ambulatory patients, who comprise the vast majority of the cardiac population.

Dr Messer also has proposed the development of a separate coronary care unit within the Medical Intensive Care Unit. This would provide an appropriate area for coronary patients so they would not be in the same area with patients suffering from a wide variety of other emergency problems.

Dr. Messer and his colleagues in the Section are deeply concerned with strengthening cardiac programs throughout the Rush Network. (See article on page 29.)

"We are trying to realize Dr. Campbell's and Dr. (Mark) Lepper's ideals for a total Rush health care system," Dr. Messer said. "We have barely scratched the surface of what the Rush Network can do." Currently, a major thrust

Csaba Hegyvary, M.D., conducts digitalis studies.

"The essence of first-rate clinical investigation is taking excellent care of patients but at the same time trying to understand and learn from every little thing that's going on."
–John S. Graettinger, M.D.

Edmund Bolton, M.D., left, and Emergency Room staff begin life-saving procedures.

is to involve cardiologists from the Network hospitals in the extensive continuing education programs and undergraduate lectures at Rush, thereby expanding opportunities for student and postgraduate education and research throughout the Network. Dr. Messer believes that such cooperative efforts can be greatly extended through the Chicagowide Interinstitutional Cardiovascular Center, which he heads. This program, a project of the Chicago Heart Association, involves all major teaching hospitals and health agencies in metropolitan Chicago. Dr. Messer is also vice president of the Heart Association.

When the Cardiovascular Health Maintenance Program begins, much of its success in follow-up of cardiac patients will rest on a cardiology information system being developed by Eugene F. Uretz, an engineer and computer specialist who also serves as technical director for the Section of Cardiology. Mr. Uretz is attempting to computerize the processing and storage of just about all the patient information being generated in the Section.

"We are already preparing for computer handling of the data from all cardiac catheterizations and pacemaker follow-up tests. We have the ideal vehicle for setting up a comprehensive data base because cardiac data is so amenable to computerization. The Section is acquiring a new computer that will automate the acquisition and storage of cardiovascular data and put it into a unified data base for later retrieval. This base will allow statistical correlation of information acquired from diversified sources and tests. The Medical Center's existing computer facilities will be enormously valuable in the effort.

"We're putting a great deal of effort into this, because we think results based on a broad data base and large patient population will lead to appreciably enhanced cardiovascular treatment," said Mr. Uretz.

Using data from all cardiac patients, the Section will be able to work toward a formal follow-up program, as well as develop more accurate parameters for future decision-making.

Electrocardiogram analysis soon will be computerized. At present, the electrocardiogram is pre-read by technicians, house staff and Fellows in Cardiology, which results in a wide variation in measurement and diagnosis. Then the EKGs must go to an attending cardiologist for final interpretation. Except for surgical cases, which are expedited, this can take several days because of the enormous volume. Together with the cardiologists in the Section, Mr. Uretz is developing a computerized system to read, measure, store, and produce preliminary EKG diagnoses within minutes of acquisition. These data are then given to a cardiologist for final interpretation, which will be stored in the computer and can be readily correlated with other cardiovascular data. The computer will standardize terminology and effect great savings in manpower, reporting time, and storage costs. As a teaching tool, the computer promises to be of great benefit to students and practicing physicians.

While the Section of Cardiology has only been able to work in the area of prevention in a limited way

Continued on page 14

Pediatric Cardiology: Fighting Problems That Start Early

“The baby appeared to be fine when he was discharged at three days of age. There was no evidence of a heart problem at birth or at discharge.

“A week later, at 4 p.m., he was brought to the hospital in heart failure. We immediately stabilized him and began doing tests, including a chest x-ray, EKG, and blood tests. By 7 p.m., the baby was being catheterized. The diagnosis was coarctation of the aorta” [a narrowed or pinched segment in the aorta that impedes the blood flow from the heart to the body, causing markedly increased work for the heart, which may cause heart failure].

“By 8 or 8:30 p.m., the baby was in surgery. The surgeon did not have to operate on the heart itself. He removed the constricted part of the aorta and sewed the cut ends together. By 10:30 p.m., the baby was out of surgery and in intensive care. The next morning he was fine. We sent him home 10 days later.

“He was lucky. These conditions are being recognized earlier by referring physicians, and the chances of survival are much greater.”

Eight out of every 1,000 babies born alive have a heart defect.

Twenty or 30 years ago, in some cases even 10 years ago, families of infants born with certain congenital heart defects could expect them to live for a few days, a few months, or at most a few years. However, with an ever-growing number of new heart surgery techniques, more sophisticated diagnostic methods, and more sophisticated methods of medical management, many of these defects are now fully correctable. A large proportion of children born with heart defects will survive and live normal, healthy lives.

Within the past several years, the risk of open heart surgery (during which the heart is stopped and its function taken over by a heart-lung machine) has decreased tremendously. Many more open heart operations are being done on infants who weigh less than 10 pounds. Today, even premature infants who weigh only one or two pounds can undergo certain types of heart surgery successfully.

Because of a better understanding of the physiology of congenital heart defects, more sophisticated surgical and anesthetic techniques, more sophisticated materials, and better postoperative care, the mortality rate for cardiac surgery in infants and children is less than 1 per cent for many types of procedures, and about 10 per cent overall when the most complex procedures are taken into account.

Congenital heart problems can be detected immediately in some infants, but with others it may take weeks or even years to observe any evidence of a heart defect.

In cases where an immediate problem is evident, the child, at birth, usually will be cyanotic (bluish), breathing rapidly, have a very fast heart rate, and need a large amount of oxygen. Most have a heart murmur, abnormal pulse, and are obviously sick.

A large group of infants born with heart problems do not exhibit any symptoms until several weeks after birth, when they are already at home, usually having been pronounced in perfect health at discharge from the hospital.

Typically, these children begin to become irritable, lethargic, breathe too fast, and obviously aren’t feeling well. They may get pale or bluish in color when the mother attempts to feed them, and during feeding they get tired and out of breath.

“There is no clear-cut beginning. the symptoms are progressive,” explains Werner Meier, M.D., Assistant Professor of Pediatrics and Director of the Rush Perinatal Center, a state-funded regional center for critically ill newborns. The center provides tertiary care and educational and other support to a network of 10 other hospitals.

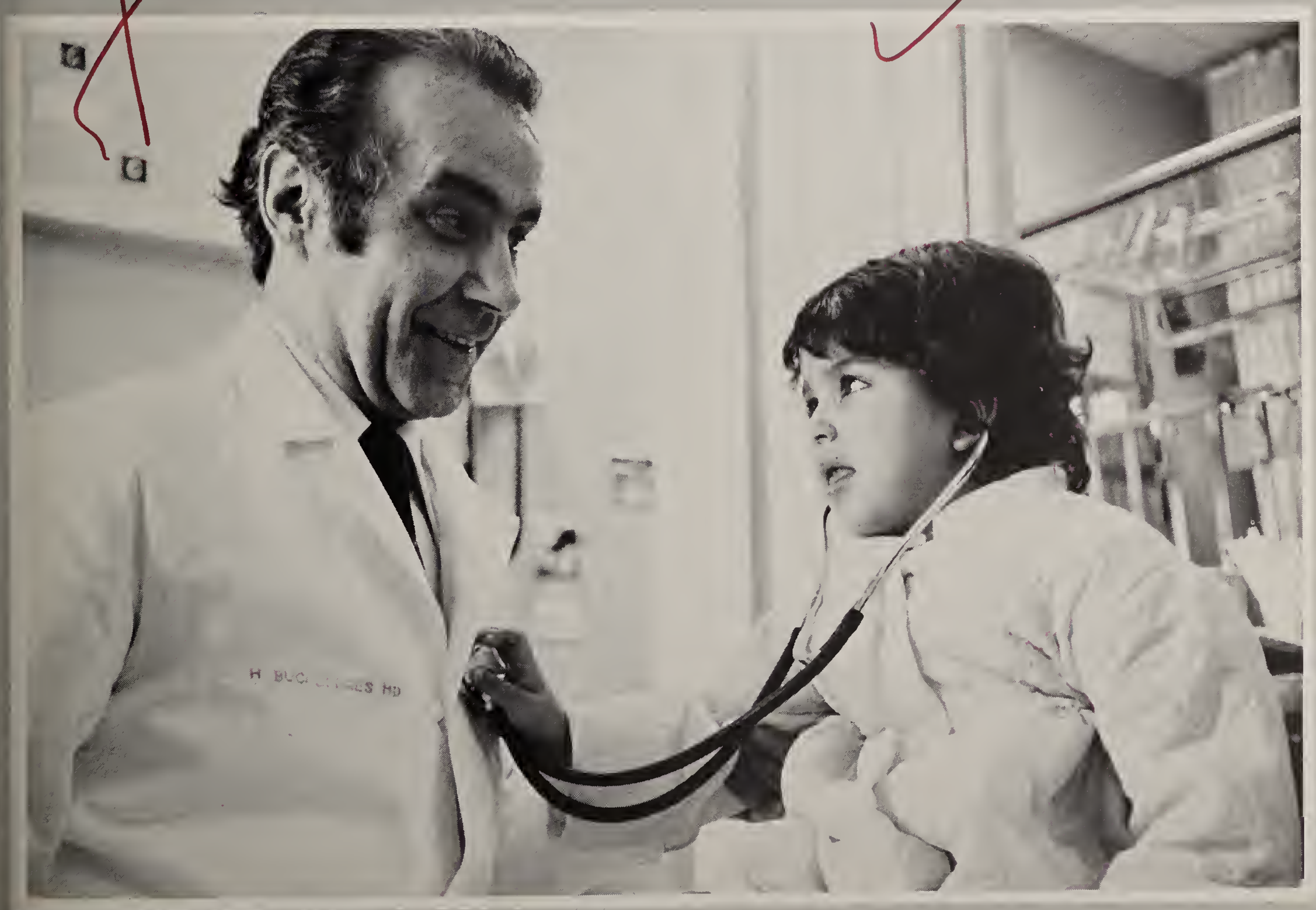
“The symptoms may be quite vague,” said Dr. Meier. “They are not dramatic enough to frighten the parents. They could be anything. Then there is an abrupt change. Within a matter of hours the child may become critically ill and die. By the time the mother brings the baby to the hospital it’s often too late, the change in symptoms is that abrupt. The parents feel enormous guilt despite the fact that there often is little they could have done.”

Dr. Meier believes one solution to this type of tragedy is to have the baby seen by a pediatrician at two weeks after birth instead of the usual six. “It is at that time that a lot of heart defects begin to show up.”

While the Perinatal Center network includes only 10 hospitals, in practice babies are admitted from twice as many other hospitals in the area. In 1976, more than 700 newborns were admitted to the Center with a variety of problems, including heart defects.

When a baby is born prematurely in another hospital and appears to be ill, the Perinatal Center dispatches a van, staffed by a physician and a nurse and equipped with diagnostic and life-support equipment, such as a respirator and a tiny electrocardiograph machine. There are direct telephone lines between the hospital and the Center and between the van and the Center, so there is constant communication and the possibility for immediate consultation with experts at Rush. The entire trip to the referring hospital, emergency treatment there, and the return to Rush can take longer than two hours, with calls going back and forth. If a heart problem is identified, the Perinatal Center will have several specialists standing by, including H. G. Bucheleres, M.D., Professor of Pediatrics and Director of the Section of Pediatric Cardiology; R. David Halstead, M.D., Assistant Professor of Pediatrics and Director of the Pediatric Intensive Care Unit, who specializes in the treatment of heart disease in infants and children; Barbara A. Santucci, M.D., Assistant Professor of Pediatrics and Associate Director of the Section of Pediatric Cardiology; and Milton Weinberg, Jr., M.D., Professor of Cardiovascular and Thoracic Surgery, who specializes in heart surgery on children and infants.

A number of noninvasive tests are done first to rule out lung disease and other problems. Finally, if it is necessary, a cardiac catheterization is performed in which tiny, infant-size catheters are passed from a vein or artery of the limbs into the great vessels and heart.



H. G. Bucheleres, M.D., has his heartbeat checked by a young patient.

"Obviously, you don't do this with every baby," said Dr. Halstead. "Only in the urgent cases.

"We are trying to see if the physiology of the heart is normal, if there are any abnormal openings between the two sides of the heart, if there are abnormal vessels, if the lungs are getting too much blood or not enough. Often, dye is injected through the catheters and moving picture x-rays are made as the dye passes through the heart and vessels. This is called an angiocardiogram. The catheterization and the angiocardiogram usually can tell precisely what the defect is and how serious it is."

Through it all, every effort is made by both the physician and the nursing staff to make sure the parents understand everything that is being done for their child.

If the baby is transferred from another hospital, the physician and nurse on the van speak with the parents and encourage them to come to Rush and spend as much time near their baby as is feasible.

"The most difficult groups are, of course, the infants," said Dr. Weinberg. "Their problems tend to be complex, and they may have other types of illnesses. Anesthesia is critical for them, they are so very tiny and weak."

A common defect of the smallest infants is patent ductus arteriosus. Every baby is born with a ductus

Werner Meier, M.D., with a tiny heart patient.

arteriosus, an open passageway between the two major blood vessels — the pulmonary artery and the aorta. After birth the pulmonary artery carries blood from the right side of the heart to the lungs to pick up a fresh supply of oxygen, and the aorta sends oxygen-laden blood from the left side of the heart to the rest of the body. Before birth, the oxygenated blood comes from the placenta and bypasses the nonfunctioning lungs. Normally, the passageway between these two arteries closes within a few hours to a few days after birth. When this fails to happen, some of the blood that should go through the aorta and on to nourish all the body tissues is sent back to the lungs, circulating uselessly between the lungs and the heart. As a result, the heart must work harder to pump sufficient blood through the body. This defect can seriously complicate the breathing problems common to premature infants. In this and other cases, the surgeon can close the ductus permanently by using a tying and cutting procedure without open heart surgery.

Other common defects are coarctation of the aorta, a narrowed or pinched segment in the aorta, and septal defects. Septal defects are openings in the septum, or wall, of tissue that divides the heart into right and left sides. They may occur in any portion between the two lower chambers, or ventricles, or in the area between the two upper chambers, or atria, occasionally in both. These defects produce a murmur and cause abnormal circulation. The Tetralogy of Fallot is a combination of defects that causes blood flow to the lungs to be restricted.

Blueness of the lips and fingernails occurs because blood that has not gone through the lungs passes through the septal defect and goes to the body. Babies with this combination of defects used to be called "blue babies." Total correction of this complex problem is difficult in infants, but an operation can be carried out to provide temporary relief by increasing blood flow to the lungs. The procedure allows the child to grow and develop almost normally until he can reach an age when total repair is possible.

"With the new procedures that constantly are being developed, we are doing few temporary operations and starting to do more and more permanent ones in infants," Dr. Weinberg said.

In an effort to improve early detection of congenital heart disease, Dr. Bucheleres has focused on developing a close relationship in consultation and education with the pediatrics and cardiology staffs of the hospitals in the Rush Network.

He is participating in the development of a registry of congenital heart defects through the Chicago Heart Association. Dr. Bucheleres hopes to be able to develop a transport system similar to that of the Perinatal Center that would be available for all children diagnosed as having heart defects, so they can be brought to Rush under optimal circumstances.

Like all the pediatric cardiologists in his Section, Dr. Bucheleres participates with the surgeon in the preoperative care of his patients, attends the operation, and participates with the surgeon in postoperative care. Follow-up in the Section of Pediatric Cardiology continues until the age of 21. However, once the children have been operated on successfully, they have very few if any restrictions and are able to engage in normal activities.

In most cases, congenital heart disease is not preventable. But another type of heart disease that strikes children is eminently preventable. This is heart disease that results from rheumatic fever. Rheumatic fever may result from streptococcal infection in the throat. About 3 per cent of the millions of children who get strep throat every year get rheumatic fever. There are from 100,000 to 200,000 cases of rheumatic fever in this country annually, and about half of them result in heart damage.

Rheumatic fever usually manifests itself about two weeks after a strep infection. The majority of children it affects are in the four to 10 year old age range. At first the child doesn't look well, has no appetite, is restless. Then a low-grade fever begins. There may be joint pain, muscle pain, flushing, blotchy areas on the skin, abdominal pain. Rheumatic fever causes inflammation of the joints (arthritis), heart (carditis), brain (chorea), and skin manifestations.

The brain, joint, and skin manifestations all go away as the disease abates but, in most cases, the heart valve deformity remains. If the rheumatic fever was mild, or if it occurred in an older child, it may not produce much heart damage. The extent of heart damage usually is related to the child's age at onset of the fever and the duration of the acute phase.

Joseph Christian, M.D., Professor and Chairman of the Department of Pediatrics, has specialized in the treatment of rheumatic fever for almost 30 years and established the Rheumatic Fever Clinic when he came to Presbyterian-St. Luke's Hospital in 1961. The clinic has been expanded to include rheumatoid arthritis, collagen diseases (diseases of the connective tissues, with a high incidence of cardiac involvement), and other heart problems.

Patients from throughout the state are referred to the clinic through the State of Illinois Division of Services for Crippled Children, which sponsors children whose families cannot pay the clinic fees or pay for medication. The latter is extremely important because some rheumatic fever patients must take medication, either penicillin or sulfadiazine, for as long as 20 years after their illness to prevent new strep infections, which could result in a recurrence of the rheumatic fever. There is no way to modify the heart damage caused by rheumatic fever. The inflamed heart valve structures often start to scar, a process that can continue for more than 20 years. Healing may cause stenosis, or narrowing in the valve. Because of the extra load the damaged valve puts on the heart muscle, the condition can get progressively worse and, ultimately, the valve may need to be replaced. In some cases, it is difficult to determine how seriously the function of the heart has been affected by the narrowed or leaking valve. Usually there are murmurs, but it may be years before the murmur is evident.

Rheumatic fever is a long-term illness requiring careful follow-up. At the Rheumatic Fever Clinic, mothers are provided with a culture plate so they can take throat cultures any time their children have a sore throat and can tell immediately whether it is strep.

"We brainwash the families about the dangers of strep and the ease of diagnosis," Dr. Christian said.

"We worry about compliance, but we also worry about making hypochondriacs out of the children. Sometimes when they have been on medication for 15 or 20 years and we finally tell them they can go off the medication, they don't. They may sneak the medication because they're afraid to stop. They can't believe they don't need it anymore."

Leo M. Henikoff, M.D., Acting Dean of Rush Medical College and Acting Vice President, Medical Affairs, for the Medical Center, maintains a pediatric cardiology practice and has been conducting research on effective ways of preventing rheumatic fever. The only way this can be accomplished is by preventing strep throat. More than 60 different types of streptococcus are known, and many unidentified types exist. All these variations can produce rheumatic fever, making an immunization program virtually impossible. Furthermore, since it is believed that the body's response to the streptococcus in some way causes heart damage, even if a vaccine against strep could be developed, it might evoke enough of an immune response to hurt the heart. Finally, strep infections sometimes are difficult to detect because they may be so mild that they do not cause a sore throat.

Dr. Henikoff recently directed a project where medical teams went into areas of high risk and took throat cultures from all children in the schools, treating those with positive cultures. Six schools, with about 500 children in each, were involved. The project was able to reduce the incidence of strep throat in these areas from 20 per cent to less than 4 per cent. However, while the program was enormously effective in reducing strep throat, it proved too costly a method, both financially and in terms of the manpower required.

Dr. Henikoff now is developing a new program that he hopes will produce similar results at a much lower cost. The project will be conducted in cooperation with the Chicago Board of Health, which analyzes 100,000 throat cultures a year, and the Chicago Heart Association. The Board of Health will record and computerize the patient's age and address for every culture that comes in. If an unusually large number of cases appear to be turning up in a particular section of the city, an epidemic can be defined before it starts. Medical teams then can be sent into all the schools in that area to collect cultures and treat children who are sick. This would prevent the infection from spreading and thus ultimately prevent rheumatic fever and rheumatic heart disease.

The tremendous clinical advances in treating congenital heart disease and deformities caused by rheumatic fever have in part been possible because we have been able to increase our knowledge about how the heart works in health and disease. Among the people who have made important contributions to this knowledge are Maurice Lev, M.D., Distinguished Professor of Pathology, Medicine, and Pediatrics, and Saroja Bharati, M.D., Assistant Professor of Pediatrics. Dr. Lev is Director of the Congenital Heart Disease Research and Training Center at the Hektoen Institute of Chicago, which is sponsored by the National Institutes of Health and the Chicago Heart Association.

"What we do here is try to correlate the clinical data with the pathological findings," Dr. Lev said. "We try to determine the correlation so we can have more knowledge about the heart and can treat it more effectively. It's a mutual learning process."

Dr. Lev used to see the common congenital heart deformities. He doesn't see as many anymore, however, because they can be successfully treated now. The abnormalities he and Dr. Bharati see more frequently are the uncommon and complicated ones, for which treatments have not yet been developed and which invariably are fatal.

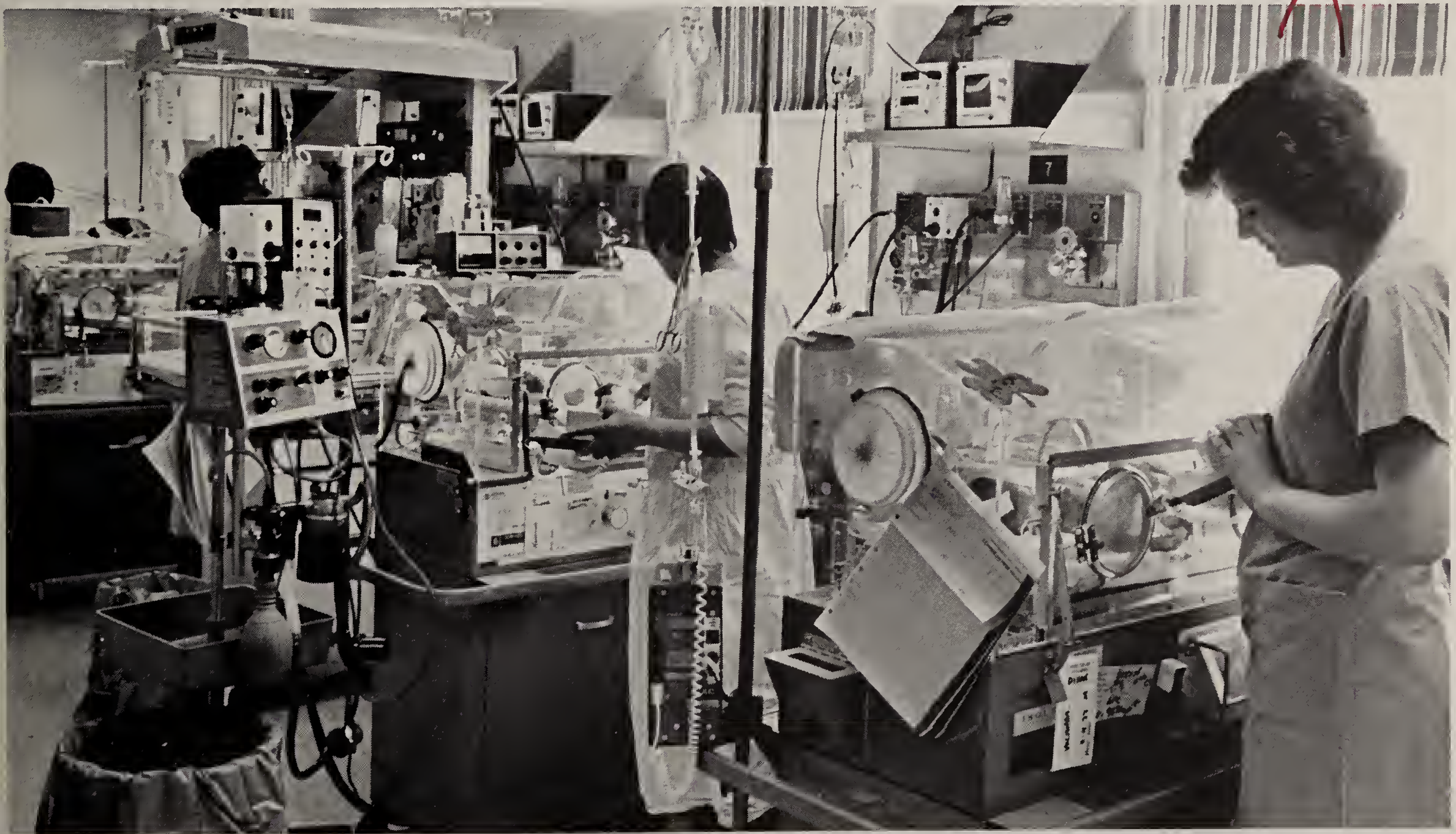
In one of the most frequent types of abnormalities they now see, the left side of the heart is very underdeveloped or even nonexistent. There is no known treatment, and most of the infants die before they reach the age of three months. Dr. Lev and Dr. Bharati see at least one such heart per week.

Dr. Lev and Dr. Bharati hope that what they learn when they study these hearts will enable surgeons to develop new techniques. They collect defective hearts from all over the country and categorize them into groups. They have close to 5,000 hearts now categorized into some 77 groups.

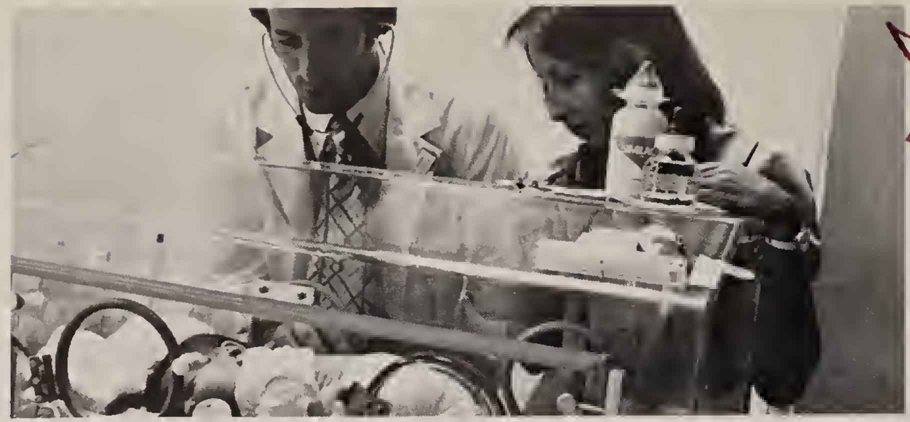
They also do research on the conduction system of the heart and examine disease processes in various types of heart block or abnormal connections in the conduction system. Under Dr. Lev and Dr. Bharati's direction, technicians may take as many as 20,000 microscopic sections to find exactly where an anomaly is in a heart. Sometimes in cases of abnormal connections in the conduction system, the location is so deep and intricate that the surgeon cannot reach it. These studies of each heart take months. Then the findings are correlated with those of the physicians who sent them the heart.

Dr. Bharati has developed a self-teaching program for cardiologists, cardiovascular surgeons, pathologists, and internists, who come from throughout the country to use it. The hearts are preserved and categorized into the more common defects. The physicians can examine the hearts and read specially prepared manuals that describe the defect and discuss all known pathological aspects.

Both Dr. Lev and Dr. Bharati are considered world authorities on congenital heart problems. Dr. Lev has written some 300 papers on aspects of congenital heart abnormalities, and Dr. Bharati has written about 80 since she joined him in 1970.



Newborns with heart defects are monitored in the Perinatal Center.



Perinatal care

Continued from page 7

because of its enormous treatment case load, preventing heart attacks is one of the major focuses of the Medical Center's nationally acclaimed Department of Preventive Medicine.

"Prevention is the only way this country can afford to deal with the staggering cost of heart disease," said James A. Schoenberger, M.D., Professor and Chairman of the Department of Preventive Medicine, who is directing several studies at Rush that are part of large national programs aimed at learning how to prevent heart attacks.

One of the programs is MRFIT, the Multiple Risk Factor Intervention Trial, which attempts to manage or reduce the risk factors of 225 men who are at particularly high risk for heart attacks. This is being done by controlling their hypertension and encouraging them to change their diet, stop smoking, and exercise more. The study, begun in 1973, is going on at 20 other centers in the nation, so a total of 4,500 men aged 35-57 are being studied. The 225 at Rush are being compared to a control group of 225 evenly matched men who are seeing their own physicians on a regular basis. In addition to physicians, the MRFIT staff includes a psychologist, nutritionist, and specialist in smoking withdrawal.

"We want to see if a combination of interventions can prevent heart attack, if intensive intervention can improve the risk factors," Dr. Schoenberger said.

"It's the most extensive trial of its kind ever funded by the National Heart, Lung and Blood Institute of the National Institutes of Health." MRFIT still has five years to go.

Dr. Schoenberger is the chairman of the national steering committee for another important study in which 30 major medical centers, including Rush-Presbyterian-St. Luke's, are participating. The study is AMIS, the Aspirin Myocardial Infarction Study. The object of AMIS is to see whether aspirin, a mild anticoagulant, can help prevent the recurrence of a myocardial infarction. The Rush portion of the three-year study, begun in August, 1976, involves men and women aged 30-69 who have had one or more heart attacks. Half get one gram of aspirin a day, the other half get a placebo. The study is double blind, so no one knows who received what until it has been completed.

"Atherosclerosis is an inevitable process of aging," said Dr. Schoenberger, "but perhaps we can slow the process down."

Women were included in the study because the number of women who are developing heart problems is increasing rapidly. For example, Dr. Muenster noted that from having hardly any female patients, his female patient load has increased to almost 25 per cent of his total patient group. Women are smoking more, and because they are competing with men in the job market, they are entering far more stressful situations than ever before, eating less carefully, and exercising less. The result is not only more heart attacks but, even more surprising, more heart attacks among younger women, in their child-bearing years, who were thought to be virtually "immune" to heart attacks.

Dr. Schoenberger, past president of the Chicago Heart Association and a vice president of the American Heart Association, currently is helping to develop a curriculum for educating children in the public and parochial schools about heart attack risk factors.

Whether stress is a risk factor for coronary heart disease is a highly controversial topic. The general consensus seems to be that while stress may be a contributing factor to coronary artery disease, no one is clear as to what extent it contributes and how much stress is too much.

"Stress is a medically undefined term," said Richard Shekelle, Ph.D., Professor of Preventive Medicine. Dr. Shekelle, an epidemiologist and biostatistician, has found some evidence for an association of social status inconsistency and heart attack risk. For example, a person with little education who "makes it to the top" or a person with very high education who achieves little are both in status-inconsistent positions. In a long-term study, started in 1958, of 2,000 men at the Western Electric Hawthorne Works in Cicero, Ill., social/psychological tests were included in addition to the usual blood, electrocardiogram, cholesterol, and other tests. Among the factors measured were whether the subject's class of origin and his wife's class of origin were different from their present social class; whether the husband's education was less than the wife's; and whether the husband's class of origin was lower than the wife's class of origin. The study found that "men with four or five incongruities were found to have about six times the risk of coronary heart disease as compared to men with none of the incongruities. . . . This association could not be explained by correlation between number of incongruities per subject and serum cholesterol, arterial pressure, blood glucose, age, educational status, relative weight, and cigarette smoking."

Dr. Shekelle is testing the

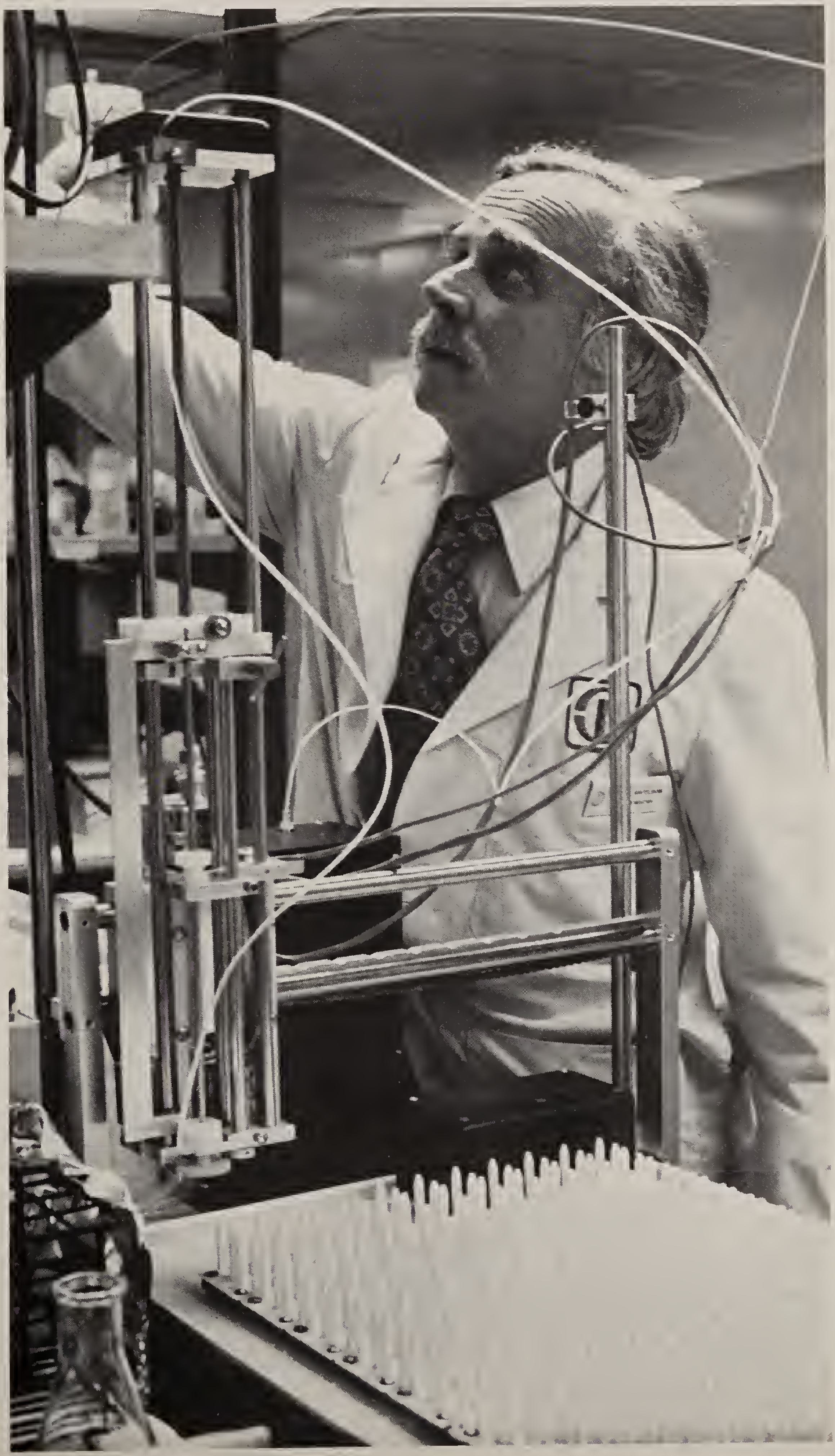
"Prevention is the only way this country can afford to deal with the staggering cost of heart disease."
– James Schoenberger, M.D.

theory further by participating in the MRFIT study, in which a questionnaire similar to the one in the Western Electric study has been incorporated. He is the principal investigator of the MRFIT Behavior Pattern Study, a national substudy of MRFIT.

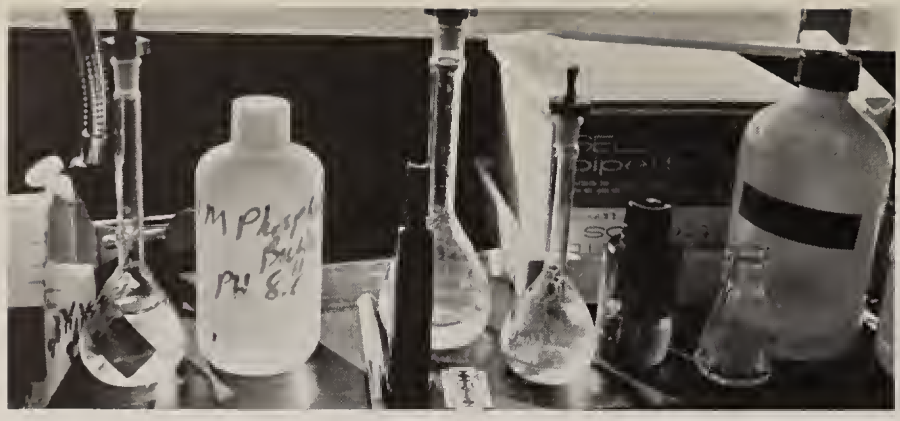
In the substudy, Dr. Shekelle also is testing the controversial theories of R. H. Rosenman, M.D., and M. Friedman, M.D., San Francisco physicians and authors of "Type A Behavior and Your Heart." The thesis of this book is that people who are hard driving, aggressive, and show an intense time urgency are exhibiting a behavior called Type A and are at elevated risk for heart disease. Dr. Shekelle believes there may be some validity to the theory, but that not enough evidence has been presented.

"Essentially, we'll have to wait another five years until the MRFIT program is over to determine whether the mortality is greater in Type A men," he said.

The first contact a heart attack victim has with a hospital is usually the hospital's emergency room. Several heart attack victims or suspected heart attack victims are brought each day to the emergency room at the Medical Center. Highly skilled emergency room teams are on the alert to initiate immediate life support systems and other procedures as soon as heart attack victims are brought in. If it is an obvious heart attack, intravenous medication is begun immediately, the patient is connected to a monitor, an electrocardiogram is taken, and the physicians on the scene try to diagnose what sort of heart attack it is. A portable x-ray machine is



Max Rafelson, Ph.D., in lab where he studies how platelets aggregate.



In the lab.

brought, and oxygen is administered if necessary.

"As soon as they're physically stable, we try to treat some of the fears they're having," said Edmund Bolton, M.D., Assistant Professor of Medicine and Director of the Emergency Room, who is a cardiologist. "We try to take care of the pain, which can be excruciating, and we try to reassure the patient and the family and try to maintain calm. For an uncomplicated heart attack, a two- or three-person team is sufficient, but if someone is in cardiac arrest we need more hands. We usually have a medical resident on the scene, a nurse practitioner, and myself." It usually takes from 45 minutes to an hour to stabilize a patient, although in some cases it can take as long as two hours.

The emergency room staff receives considerable support from the Social Service Department, which works with patients' families, helps arrange for home nursing care if necessary, tries to arrange for public aid if the family is eligible, and generally helps patients and families cope with the anxieties of the situation.

Most heart attack victims are brought to the Medical Center during the day.

"Usually when people are sleeping, they don't have heart attacks. Typically, they go to work, start working, and may get the attack around 10 or 11 a.m. That's when we are busiest," Dr. Bolton said. "Any real heart attack victim, who suffers damage to the heart, is at risk for arrhythmia, cardiac arrest, or other complications for the first few days," Dr. Bolton said. "We need to have them in a unit where they can be monitored constantly."

To accomplish this, after the heart attack patient has been stabilized in the emergency room, he is moved to the Medical Intensive Care Unit, directed by Michael A. Codini, M.D., Assistant Professor of Medicine and a member of the Section of Cardiology.

This unit is equipped to handle any kind of cardiac diagnostic and treatment process except for full cardiac catheterization and surgery. Limited catheterizations can be done, temporary pacemakers can be implanted on an emergency basis, and inaortic balloon pumps can be implanted to support circulation in a failing heart. Patients with myocardial infarction stay in the intensive care unit from three to four days, and up to six days if there are complications. Nearly every cardiac patient is supported with oxygen. The lungs are usually weakened, and pneumonia is a very high risk.

"This is a very stressful environment," said Dr. Codini. "You can't afford to make even the smallest mistake. Intensive care units, because of the nature of their patient population—not only heart attack patients but other patients who are critically ill—have very high mortality rates. I am fully aware of the limitations of what we can do. But many times we see a patient who is dying and who makes a remarkable recovery. I guess that's what keeps us going."

Dr. Codini also is engaged in animal studies to measure the extent of infarctions and the effect of nitroglycerin on infarction size in dogs. He hopes to determine whether, by pharmacological intervention, the size of the infarction can be modified. He is using new equipment that precisely reproduces the recording and monitoring system of the catheterization laboratory, so cer-

Milton Weinberg, Jr., M.D.

"We as physicians can't serve as employment agencies for patients. We must leave that to social agencies. We can help by giving them precise evaluations of how much exertion an individual can handle."

– Joseph V. Messer, M.D.

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tain parameters can be followed reliably in a manner that could not be done before and a much more precise measure can be obtained.

In the first urgency of saving the patient's life, there is no time to consider how that life will be lived after it has been saved—how productive the person will be, what options are available, what changes in lifestyle will have to be made. But after the immediate crisis is over, these questions must be addressed. In many institutions, there is no one to help patients with these very serious problems. At the Medical Center, two members of the faculty of the College of Nursing have spent the past two years coordinating a group of interested nurses from several Medical Center departments, with the goal of establishing a program to deal with some of these problems. The program involves physicians and nurses, and eventually will involve pastoral care, social service, and physical therapy staff.

Karyn Holm, R.N., M.S., Assistant Professor in the College of Nursing and Practitioner/Teacher in Medical Nursing, started her career in the Medical Intensive Care Unit, where many of her patients were heart attack patients. "We couldn't do much teaching, because patients at this time experience high levels of stress, both emotional and physiological, so we began follow-up and teaching of patients after they were moved out of the intensive care unit," she said.

With a colleague, Pam Carlsen, R.N., M.S., an instructor in the College, she developed a program centering on a slide-tape presentation to provide extensive information to patients and families. The slide-tape presentation can be shown at the patient's bedside and patients can view it as many times as they wish. The presentation covers such topics as diet, physical activity, the pathology of the heart attack, sexual activity, preventing another heart attack, and stress. There is an accompanying booklet, and information can be added or subtracted, depending on the patient's needs.

"We expect this to be followed by a discussion with the physician. We intend it to be a point of departure for questions and discussions with the physicians," Ms. Holm said.

"You can't teach people unless they're ready to learn. A patient is ready to learn when he starts to ask questions.

"After the acute pain is over, the patient often feels pretty good. But we tell him he can't get out of bed, can only wash his hands and face, and must follow a restricted diet. That doesn't make sense to him."

Ms. Holm and Ms. Carlsen also plan to conduct some studies to evaluate whether patients, regardless of their educational levels, understand the programs and plan eventually to follow-up on the patients after discharge from the hospital.

"As nurses, we try to talk to the patients, give them feedback, and explain their environment to them, for example why their EKG is continuously being monitored. We also work with the family. The patient looks to the family for support, but the family looks to the staff for support.

"You feel a constant responsibility for a patient's life. If a patient dies, your first thought is, is it something I've done? There's a lot of anxiety and guilt for nurses. But we get our highs from seeing people recover and leave the hospital with sufficient information to adjust to the necessary changes in their lifestyle," Ms. Holm said.

A heart attack often brings emotional problems along with the physical ones.

The most common is depression, according to Stephanie Cavanaugh, M.D., Assistant Professor of Psychiatry and Director of the Psychiatric Liaison Service, which provides psychiatric intervention when needed to patients hospitalized with physical ailments. A myocardial infarction causes a major assault on an important organ, and the patient cannot help but view the situation as life-threatening. Furthermore, the heart symbolizes the center of emotions, the center of life, and many patients become deeply depressed that this symbol has been injured. Dr. Cavanaugh said studies of patients who have had open heart surgery revealed that many often could not deal with the fact that the heart had been cut.

"The most common type of patient reaction to a heart attack is a grief reaction," Dr. Cavanaugh said. "A patient grieves over the real or fantasied loss of a physical function and what it may mean in terms of family, job, or place in the community."

More rarely, a patient becomes severely depressed and is unable to sleep, wakes up early in the morning, feels helpless, feels that life is hopeless, has trouble eating, has tearful episodes, has suicidal feelings, and generally has an unrealistic view of what has happened. Along with psychosocial therapy and administration of antidepressants, Dr. Cavanaugh works out a team plan with the Cardiology staff so the patient can be "re-entered" into a normal, functioning situation as quickly as

Continued on page 20

Coronary Artery Bypass: Revolution in Treatment

Ten years ago a new operation was introduced that has revolutionized heart disease treatment.

The coronary artery bypass operation is a surgical procedure to bypass arteries occluded by atherosclerosis, thereby developing a new route to bring oxygenated blood to the heart. The operation involves taking a vein from the leg, placing it near the heart, and making two connections, one with the aorta and the other with the involved artery, so that blood is detoured around the blockage.

In 1968, four coronary artery bypass operations were performed at the Medical Center. In 1976, more than 500 such operations were performed. Currently, almost two-thirds of all adult open heart operations performed at the Medical Center are coronary artery bypass operations. All other types of heart problems together make up the other third. It is estimated that nationally, nearly 100,000 bypass operations have been performed in the past 10 years.

The explosion of demand for this operation is beginning to tax the supply of resources needed to perform it — physician and ancillary personnel, and space and equipment. The operation is also so new that few long-term studies have been completed to evaluate its effectiveness. According to Hassan Najafi, M.D., Professor and Chairman of Cardiovascular and Thoracic Surgery at Rush-Presbyterian-St. Luke's Medical Center, "the 10-year experience leaves no doubt regarding the anticipated merits of the operation. The procedure has enjoyed increasing popularity, offering relief from angina pectoris to the majority of patients. In terms of reducing the incidence of heart attack and prolonging life, the recent data from several major medical centers are quite promising."

Hassan Najafi, M.D.

At present, coronary bypass surgery is performed on patients with coronary artery disease who have suffered from anginal pain, heart attacks, or certain complications of heart attack, such as ventricular aneurysm.

"Although we are limiting ourselves to this group of symptomatic and troubled patients, there are increasing reasons to extend detection, diagnosis, and treatment to the asymptomatic population that is likely to develop clinical coronary artery disease," said Dr. Najafi.

"A significant number of patients who develop serious or even fatal heart attacks never have experienced any previous symptoms," he said.

But, Dr. Najafi estimated, if the operation were extended to the asymptomatic, there might be as many as 10 million persons in the country who potentially could benefit from the operation. The result would be a manpower dilemma, particularly for ancillary personnel, and a tremendous need for additional space and new equipment.

Training the highly skilled personnel needed for this type of surgery cannot be done quickly. After completing medical school, a cardiovascular-thoracic surgeon must complete a five-year residency in general surgery, then a two and one-half to three-year subspecialty residency in cardiovascular and thoracic surgery before he can begin to practice. The critical question of manpower is under consideration by the Society of Thoracic Surgeons and the directors of approximately 100 training programs in the specialty in the U.S.

Following coronary bypass surgery, patients are moved to the Surgical Intensive Care Unit where, under the supervision of their surgeon and residents, they are cared for by a team of specially trained nurses.

"The patient's cardiac status is closely observed through continuous EKG monitoring and frequent evaluation of vital signs," said Kathy Mahony, R.N., Assistant Head Nurse for the unit. "Respiratory care for patients who have been under anesthesia for a long period and who have been on the heart-lung machine is especially important. Their respiratory status is initially supported with a ventilator and monitored with arterial blood gas valves. When they go off the respirator, a vigorous inhalation therapy and chest physical therapy program is instituted to assist the patients in keeping their lungs clear."

The patient's appearance immediately following surgery usually causes concern to their families due to the presence of many tubes and the patient's not being fully recovered from the anesthetic. "At that point," said Ms. Mahony, "we usually introduce the family to a patient who had open heart surgery the day before, and show them how well the patient looks. By the next day the patient is sitting up in bed and can talk to them and is able to eat. Two days after open heart surgery we try to get them up and walking."

The Surgical Intensive Care Unit has 19 beds, with a ratio of one nurse per two patients around the clock. When the patient is sufficiently stable he is transferred to a regular unit. Because patients are in the unit for a highly critical period, the nurses in this unit must be specially trained and highly skilled.

One unusual problem that sometimes affects patients who have had any type of open heart surgery is a kind of transient mental reaction. According to Stephanie Cavanaugh, M.D., Assistant Professor of Psychiatry and Director of the Psychiatric Liaison Service, studies have shown that there is a relationship between the amount of time the patient is on the heart-lung machine and the degree of transient mental disturbance. There also is a relationship between the amount of time they spend in the intensive care unit and the degree of mental disturbance. Dr. Cavanaugh believes that, if at all possible, the patient should not be kept in the unit more than three days.

"The sooner they get their glasses and their false teeth back and are able to walk around and talk to their families, the better," said Dr. Cavanaugh.

Some of the symptoms, all temporary, which the patients may experience are an inability to sleep, restlessness, irritability, a belief that they are being laughed at, or even that the hospital staff is trying to kill them. In extreme cases, patients have pulled their tubes out.

Evidently, however, preventive efforts both in Dr. Najafi's department and in the Surgical Intensive Care Unit are producing results.

"Five years ago, we saw that kind of thing a lot in the unit," said Ms. Mahony. "Now we hardly ever see it."

"We have made a very conscious effort to reduce the incidence of this type of mental problem," said Dr. Najafi.

"When we first started performing open heart surgery, it was common to have patients on the heart-lung machine for several hours. Now we have it down to from one to two and one-half hours. We feel this is a significant step forward. We try to inform the patient and his family before the operation about what to expect when it is over. We also no longer use an oxygen tent after surgery, which must have been very unpleasant and perhaps, in some instances, caused claustrophobia. We have provided better lighting and reduced the noise level in the Surgical Intensive Care Unit. Finally, we used to use a great deal of transfused blood in these operations. In most instances, it was almost a total blood exchange. I believe this was a tremendous upset to the system that may have affected the patient's mental balance. We are now routinely able to operate with very little blood transfusion."

In the 10 years that the coronary artery bypass has been performed, the heart surgeons at the Medical Center have seen a marked increase in the number of female patients. From a ratio of nine males to one female, the proportions have changed to nearly seven males to three females.

"This may be because women in our era are getting involved in the same kinds of circumstances that men are. One may speculate that in from 10 to 15 years the ratio will be equalized," Dr. Najafi said.

Checking the patient.

Continued from page 17

possible. The patient's family is usually very closely involved in this effort.

Another common emotional problem is cardiac neurosis. A patient with this problem is terrified to perform any activity and has a tremendous fear that any activity will be fatal. Often fears are reinforced by the family, which may over protect and infantalize the patient. These patients are in danger of becoming "cardiac cripples" unless there is immediate psychiatric intervention.

"We try to reverse the invalid process and work out behavioral paradigms," Dr. Cavanaugh said. "We begin by getting the patient into a physical rehabilitation program, which will give the patient some sense of control."

Dr. Cavanaugh is deeply concerned about the problems of reentry into the work force that many patients who have had heart attacks must face.

"The thing that needs to be investigated is the extent to which we can rehabilitate a construction worker. Aren't we better off having people go back to work despite the risks? Isn't that better than the stress of staying home, feeling like a failure?"

Dr Cavanaugh also currently is developing a study on the relationship between tricyclic antidepressants and cardiac disease.

Antidepressants are prescribed frequently for depressed cardiac patients. However, these drugs have cardiovascular side effects, such as increasing the heart rate, decreasing the blood pressure, and slowing the conduction system of the heart. "We hope to investigate this problem and find an optimum balance between what they need and what they are able to take. We also hope to study the interactions between antidepressants and other medications that cardiac patients are on," Dr. Cavanaugh said.

The most potent, most widely used drug in cardiac disease is digitalis, a derivative of the foxglove plant. However, between 7 and 20 per cent of all patients who take digitalis experience some toxic side effects, such as cardiac arrhythmia. Csaba Hegyvary, M.D., Associate Professor of Medicine and Physiology, is trying to find a way to maintain the therapeutic effects of the drug while preventing the toxic side effects. Dr. Hegyvary heads the Analytical Laboratory in the Section of Cardiology.

"There is a very narrow therapeutic latitude," he said. Digitalis glycosides exert their effect on the body by modifying the sodium and potassium transport systems. The maintenance of normal sodium and potassium concentration inside and outside the cells is a requisite for life. The sodium-potassium pump is an enzyme protein in the cell membrane that moves sodium and potassium. Dr. Hegyvary led the team that provided direct proof that the sodium-potassium pump was the main pharmacological receptor for digitalis action. Only a small number of receptors for any drugs have been identified. Now Dr. Hegyvary is trying to learn how the enzyme receptor can be modified to maintain the therapeutic effect and prevent the toxic effect of digitalis. He is studying agents that modify the properties of digitalis receptors, including steroid hormones and thyroid hormones, in the hopes of changing the receptivity for the drug.

Dr. Hegyvary also is investigating ways to modify the lipid composition of the heart membrane, and through this to modify the sensitivity of the receptor for the drug. In this manner, he hopes to arrive at a desired pharmacological effect by changing the sensitivity of the tissue. This is particularly important in congestive heart failure. In the late phases of congestive heart failure, there is an increased sensitivity for toxic effects of the drug and a lessened sensitivity for the therapeutic effects.

He also is studying the biochemical basis for cardiac hypertrophy, or enlargement. Enlargement of the heart can be beneficial up to a certain point, beyond which it progressively impedes efficiency. Dr. Hegyvary is looking for a way of finding the upper point of beneficial enlargement without slipping into dilation. He has been inducing cardiac hypertrophy in small animals and testing digitalis on the development of this hypertrophy.

"The decision of when to start digitalis and how much to give is very important," said Dr. Hegyvary. "Should you administer digitalis as soon as you see the patient? Will it decrease hypertrophy? Is the decrease beneficial or detrimental?" The answers to these questions may result in thousands more lives being saved every year by a more effective use of digitalis.

Thrombosis, the formation of blood clots in blood vessels, is associated with myocardial infarction. It is caused by blood platelets aggregating, or coming together. Kenneth Wu, M.D., Associate Professor of Medicine and Chief of the Section of Hematology's Coagulation and Thrombosis Unit, has developed an internationally recognized system for measuring the extent to which platelets aggregate in the blood to form a clot. Using this system, Dr.

Women are smoking more, entering far more stressful situations than ever before, eating less carefully, and exercising less. The result is more heart attacks.

Joseph V. Messer, M.D., studies the results as a patient takes the treadmill test.

Wu has detected circulating platelet aggregates in patients with angina, transient ischemic attacks, stroke, gangrene of the fingers, and migraine headaches. He also is participating with Dr. Schoenberger in the AMIS study to determine whether circulating platelet aggregates in the blood are a risk factor for coronary artery disease.

High cholesterol intake and diabetes are known to be factors causing platelet aggregation. Dr. Wu is now studying the possibility that there may also be a hereditary factor. He has found that when there is platelet aggregation, the activity of certain surface enzymes of platelets is increased, which would point to an intrinsic defect.

Dr. Wu is developing a "platelet hyperaggregability profile," consisting of three tests that will measure platelet aggregation.

"By using these three tests together, we hope we can identify enhanced platelet function in patients with thrombosis. We hope this will enhance our ability in prophylaxis and treatment of patients with arterial thrombosis," Dr. Wu said.

While Dr. Wu is studying *why* platelets aggregate, Max Rafelson, Ph.D., Professor of Biochemistry, and Francois M. Booyse, Ph.D., Associate Professor of Biochemistry, are studying *how* platelets aggregate and how they attach to the lining of blood vessels, the endothelial cells. They have developed methods for growing endothelial cells in tissue culture, and are using these cultured cells in a model system to study various aspects of platelet-endothelial interactions. It has been found that platelets only attach to activated or damaged endothelial cells, and specifically to an extensive matrix of microfilaments between and/or beneath the activated cells. "The problem will be to characterize these microfilaments—it will be necessary somehow to label these microfilaments so that when we have them in a test tube we can know that these are the same filaments we see platelets attached to under the electron microscope," Dr. Rafelson said.

Drs. Rafelson and Booyse also are engaged in a collaborative study with the Mayo Clinic in Rochester, Minn., of pigs with a disease that emulates von Willebrand's disease in humans. In this disease, the platelets do not attach to the endothelial lining to prevent bleeding from a damaged blood vessel. Dr. Rafelson said, "We're trying to determine what's not there or what's not right, why the platelet doesn't stick, and we want to gain insight into how things work in the normal situation. Basically, we want to work out the molecular events that occur, the kinds of compounds that are involved, and how these processes of platelet aggregation and platelet-endothelial interaction are controlled."

Robert Eisenberg, Ph.D., the Francis N. and Catherine O. Bard Chairman of the Department of Physiology, is an authority on the electrical properties of skeletal muscle. He and Richard Levis, a graduate student and assistant in the Department of Physiology, are now turning attention to the electrical properties of heart muscle.

To do this they will go over ground that has been covered before.

"We want to be sure we can understand what contribution to the electrical properties of the cardiac muscle each of its substructures makes. We are taking an engineering and structural approach," Dr. Eisenberg said.

"We need to understand all the structures and electrical properties of cardiac muscle and how they interact."

This summer he and his associates will begin the first phase of

Medical intensive care equipment

what they expect will be a 10-year investigation. They will study frog and salamander hearts, which are kept alive in a plasma-like solution. Microelectrodes will be applied inside the cells while the hearts are in this solution. The investigators will try to find out where currents flow, and ultimately expect to be able to account for the experimental observations of electrical properties in terms of separately measured anatomy. At the same time, they will try to measure and analyze the natural electrical properties of the heart. The next step will be a study of the molecular mechanisms that underlie the electrical signal that tells the heart to contract. The failure of this signal to perform properly underlies many heart problems, such as ventricular fibrillation.

"We don't know whether what we will learn will have any effect on these problems," Dr. Eisenberg said. "We do know that historically a good plan for solving a problem is to know what's there. Our research is goal-oriented only in the sense that we are putting together the building blocks."

One of the first procedures that victims of heart attacks and patients suspected of having heart disease undergo is a simple chest x-ray. Nonambulatory patients can be x-rayed with a portable x-ray machine, which sometimes eliminates the need for the patient to leave the emergency room or intensive care unit and go to the x-ray department.

"We are often the first consultants," explained Guy Matthew, M.D., Associate Professor of Diagnostic Radiology, who with Dr. Muenster performed the first coronary arteriogram at the Medical Center in 1964.

"Radiologists are concerned with size and shape abnormalities. Through looking at a chest x-ray, we can see if the heart is abnormally large, if there are contour abnormalities, if the great vessels are abnormal. We help direct the patient to the proper additional diagnostic tests and treatment. If there is a heart murmur, we can aid in the assessment of the degree of valve involvement. The Cardiologist uses this information in deciding whether to catheterize.

"There's a delightful cooperation among Cardiology, Cardiovascular Surgery, and Thoracic Radiology," said Dr. Matthew.

"The diagnostic studies done here in these three areas are without peer in this city and are probably among the best in the country."

Anatomical studies done in the Thoracic Radiology Section include angiocardiograms and thoracic aortograms, which involve injecting contrast dyes into the arteries and veins, outlining the anatomy of the heart chambers and the great vessels. Dr. Matthew also is called to perform x-ray contrast studies of the pulmonary vessels when there is suspicion that blood clots in the lungs may be complicating the patient's heart problem.

The most recent diagnostic radiological technique is computerized tomography (CT) of the heart, a noninvasive method of giving a cross-sectional picture of the heart. It is so new that its potential is still not yet fully realized.

"CT should have the capability to eliminate the need for catheterization in some cases, and to help us make a more precise selection of the patients who should be catheterized," Dr. Matthew said.

After the basic radiological tests, persons with actual or suspected heart disease who come to Rush can get any number of other tests in an effort to measure precisely the extent and degree of their condition. The emphasis is on learning as much as possible

Leo M. Henikoff, M.D. (right).

"Usually, when people are sleeping, they don't have heart attacks. Typically, they go to work, start working, and may get the attack around 10 or 11 a.m."
– Edmund Bolton, M.D.

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from noninvasive tests.

William Battle, M.D., Assistant Professor of Medicine, directs both the noninvasive Cardiac Graphics Unit and the Cardiac Catheterization Unit in Rush's Section of Cardiology.

What sort of tests a patient undergoes depends entirely on his symptoms. If the patient has a stable problem that needs evaluation, the first test will be a continuous multistage exercise test on a treadmill, taken to ascertain if changes occur on the EKG during physical stress. The patient walks on the treadmill for from 5 to 15 minutes, depending on his condition. There currently is an interdisciplinary research program developed around this test, involving Dr. Battle; David Turner, M.D., Assistant Professor of Nuclear Medicine; Michael A. Colandrea, M.D., Assistant Professor of Medicine; Ernest W. Fordham, M.D., Professor and Chairman of Nuclear Medicine; Dr. Messer; and Edward Silverstein, Ph.D., Associate Professor of Nuclear Medicine, a medical physicist. Patients without a history of heart attack who come in for a coronary angiogram—a test that involves injecting a dye into the coronary arteries to make them visible on an x-ray film—also take the treadmill test and then receive thallium 201, a radioisotope that goes to the heart. The results of the heart scan are compared to the angiogram. Blocked or scarred parts of the heart won't take up the thallium, nor will areas of the heart that are ischemic under stress.

Thallium can be used to detect myocardial infarction, but there are easier ways. What the group is trying to demonstrate is that the thallium scan can detect ischemia, or blood insufficiency. If thallium is given during a stress test, the ischemic area will be a region of decreased thallium uptake. This may not be seen during rest. The test is being restricted to patients with chest pains and a normal electrocardiogram who have been referred for an arteriogram. They have been quite reliable in predicting significant coronary artery disease. Dr. Turner noted that although they will not replace arteriograms, thallium scans might be used as a preliminary screening device. "Thallium may be used in community hospitals to decide who should be referred for angiography," he said.

Among the other tests used by Dr. Battle's laboratories is echocardiography, a type of ultrasound study of the heart that indicates valve motion and heart wall motion. This is used routinely in patients with valvular or primary muscle disease, and is very helpful in detecting fluid around the heart. Echocardiography was first introduced clinically in 1954, but its use in the past decade has "exploded," Dr. Battle said.

Phonocardiography is a method of recording heart sounds and murmurs and recording pulses in the carotid and precordial artery.

Because cardiac catheterization is an invasive test, that is, catheters are inserted into blood vessels and guided into the heart, it is used in very specific instances. If a patient is brought to the emergency room or the intensive care unit with unstable chest pains, he may, after an EKG and chest x-ray, be taken directly to the cardiac catheterization laboratory, skipping some of the other noninvasive tests. The object is to make as precise a diagnosis as possible as quickly as possible to head off a myocardial infarction. In nonemergency cases, however, the patient typically comes in a day before the catheterization (there is about a six-week wait for "elective" studies, owing to the large volume of catheterizations done at Rush). The stress tests, blood enzyme and clotting tests, EKG, and other noninvasive tests are done the day the patient is admitted. He is seen by an attending physician and a trainee and by members of the Section's nursing staff to orient him to the catheterization procedure, explain what will happen, and allay anxieties. Catheterization is done under local anesthesia, with the patient sedated and the region around the blood vessels anesthetized. The catheter is placed in the arm or the groin, in arteries and veins, and guided under fluoroscopic control into the various cardiac chambers to measure cardiac output and pressure and to get blood samples, which can be tested on the spot to indicate how much oxygen is in the blood. Then a left ventricular angiogram is taken. This is done by injecting a dye through the catheter and taking x-ray motion pictures of the dye as it is ejected from the heart. Thus a complete anatomic picture of the heart is obtained—where the chambers are, how well they contract, where the valves leak. Then the first catheter is exchanged for a catheter made especially for injecting dye to see the coronary arteries, and x-ray motion pictures are taken of these arteries. The catheters are removed and the patient is sent back to his room. He probably will be able to return home after 24 hours. Currently, a $2.3 million program is underway for improvement and expansion of the Section of Cardiology's Catheterization Unit.

Dr. Silverstein has developed a device that produces a videotape

Coronary care unit

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of a patient's complete cardiac cycle. The patient is injected with a radioisotope that can be photographed by nuclear imaging devices as it passes through the heart. The result is a moving picture of the heart in motion, which is useful in screening and diagnosing.

Drs. Turner and Battle are testing the nuclear cardiac probe. Only four institutions in the nation are using this device, and it is the only one in the Midwest. It is a small device on a cart that can be wheeled to the bedside. A radioisotope is injected, and the probe records the ejection fraction of the heart on a graph (the ejection fraction is the amount of blood ejected by the heart with each contraction). The potential advantages of the probe lie in the fact that it is noninvasive, can be used repeatedly, and can be used at the bedside. The results of this method are being compared to angiograms and ultrasound tests of the same patients.

Dr. Codini and Dr. Turner are investigating the use of myocardial infarction imaging. Substances that will localize in infarcted tissue are injected into patients in the intensive care unit. Special isotope photographs are made, and the infarcted areas are seen as hot spots on the film. This is very helpful in cases where it is difficult to make diagnosis by conventional means, and is helpful in determining whether an infarction is present and how extensive it is, particularly if there are no clear electrocardiogram or enzyme changes.

One of the most difficult aspects of operating on seriously debilitated cardiac patients is administering anesthesia.

"We have to see that the anesthesia is administered in such a way that we don't depress the heart any further," said Max Sadove, M.D., Professor and Chairman of the Department of Anesthesiology.

"Heart surgery patients are poor risk patients because the reserve of the heart is not known. Also, some patients are acute emergencies, others are a geriatric group, others are newborns. But we do so many hearts here—more hearts than appendixes and hernias—that we are used to these problems."

Dr. Sadove's most recent research effort is not, however, in the area of anesthesia but in the development of a new noninvasive diagnostic instrument called the impedance plethysmograph.

The instrument was first developed by a group in Minnesota for the space program. It consists of two tapes placed around the neck and two around the chest. The tapes put a current into the chest, which stabilizes the chest area electrically. When blood is ejected from the heart it has a greater volume and less resistance to electrical charge. The tapes measure the charge. The recordings are almost identical to the pressure waves that come from catheterization. However, Dr. Sadove felt the instrument as developed was not accurate enough and had potential that was not being developed.

Working with Ludimir Djordavich, who holds a Ph.D. in Chemistry and Engineering, Dr. Sadove has been refining and developing the process.

"The old instrument didn't take movement into account. It was working in the right direction, but it didn't take into account the laws of physics," he said.

"We assume the heart is a pump, and we measure the basic impedance. As the heart improves, the basic impedance improves."

Dr. Sadove is conducting tests to compare the results he gets with the impedance plethysmograph with all known cardiac tests.

"We'll know the difference between all techniques and our own. Then we can build a micromini computer."

Dr. Sadove already has tested the plethysmograph on normal, healthy people, and "the information always comes out in the normal range," he said.

The instrument is about the size of two or three cigar boxes, and is completely noninvasive. Dr. Sadove believes that in many cases it could eliminate the need for catheterization.

"I believe this instrument will enable us to diagnose heart disease in new forms," he said.

"It could be used for all physical exams. All it costs is 50 cents for the tape and equipment and 15 cents for the electricity. We could have telephone linkups with ambulances and they could send the measurements back to the computer instantly. It might also improve intrauterine monitoring."

Dr. Sadove is planning a massive national comparative study of the instrument, which will compare it to all other known techniques to prove its worth in the most stringent scientific terms.

Each year, more than 100,000 people in this country have tiny battery-powered artificial electronic pacemakers implanted under the skin and connected to their hearts. The artificial pacemaker is used when natural impulses within the heart are blocked or are too slow to stimulate the heart to pump a sufficient supply of blood. Patients with this condition may have blackouts or congestive heart failure.

> *"This is a very stressful environment. Intensive care units have high mortality rates . . . but many times we see patients make a remarkable recovery."*
> *– Michael A. Codini, M.D.*

In 1963, pioneer work in the Section of Cardiology identified abnormal function in patients with complete heart block. This work also showed that improved function resulted when small electrical impulses produced by the artificial pacemaker caused the heart to beat at a normal rate.

Robert Session, former head of the Section's Electronics Laboratory, developed the first wires and electrodes that could withstand the more than 100,000 heartbeats a day and pacemakers whose rate could be changed when the patients' activity increased.

Research in the Section also showed the effects of some devices in the environment on pacemaker function, which led, for example, to the warnings posted near microwave ovens for people with pacemakers.

Robert Hauser, M.D., Assistant Professor of Medicine, heads the Section's Cardiovascular Monitoring Unit and developed the pacemaker follow-up program at the Medical Center. His main concerns have been the development of a Rush Pacemaker Surveillance Program, a citywide pacemaker registry, and the improvement of the quality control of pacemakers.

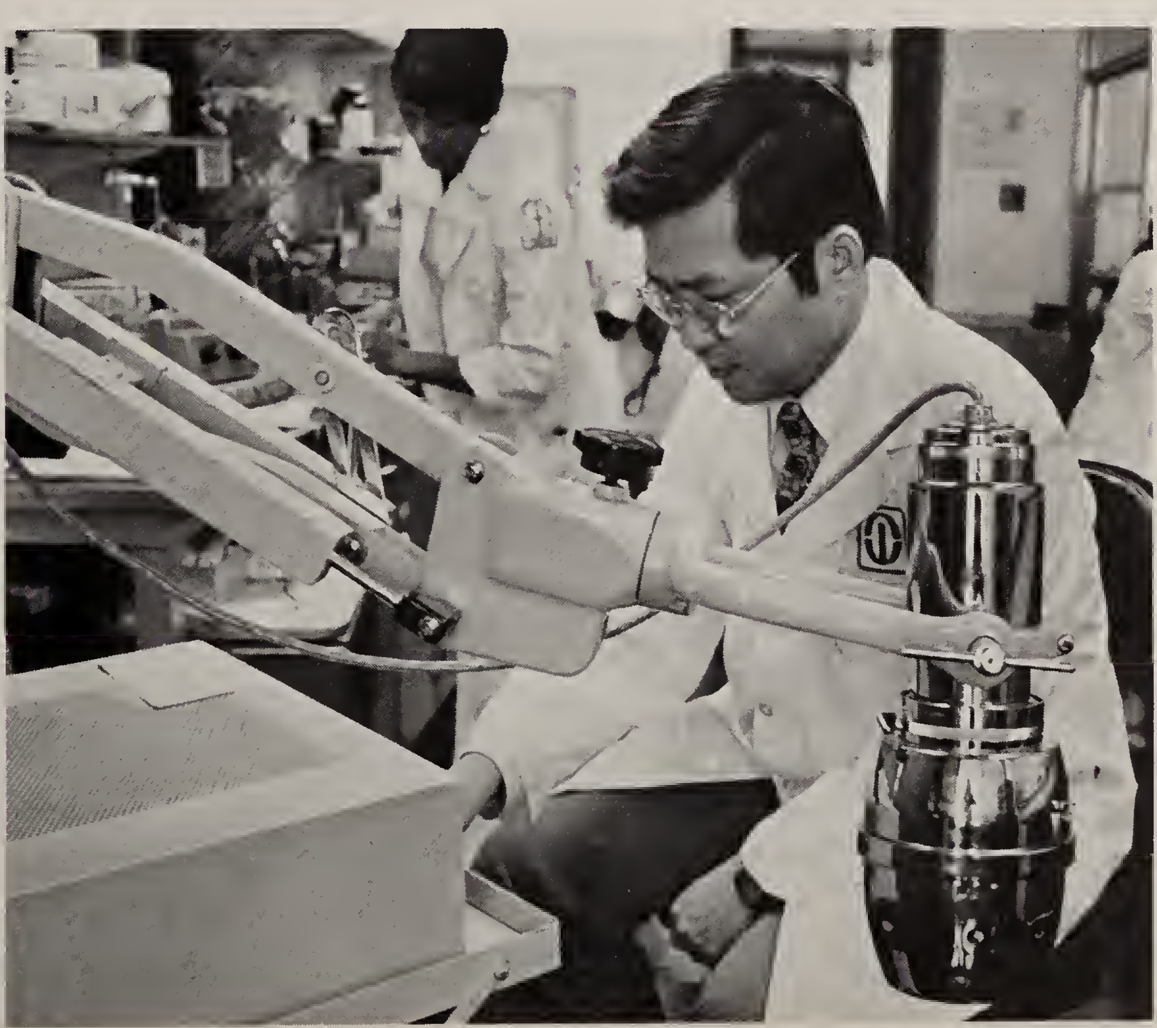
The pacemaker surveillance program is now entering its third year. In addition to regular outpatient check-ups, patients in this program have their home telephones hooked up with Rush; this permits their pacemakers to be monitored on a regular basis without their having to come to the Medical Center. More than 300 patients are being served this way. In July, Dr. Hauser began the Pacemaker Registry, a program of the Interinstitutional Cardiovascular Center. So far, nine metropolitan Chicago institutions have provided clinical information on more than 1,000 pacemakers for the registry. This enables Dr. Hauser to derive survival estimates, based on the probability of a given pacemaker functioning normally at any time after implant. This information is broken down by manufacturer and model and then computerized.

"We get a measure of how well a pacemaker model functions following implantation. This helps in the selection, follow-up, and evaluation of pacemakers. Also, by looking at the failure rates, we can see how often to do telephone follow-up on certain pacemakers and when to start," Dr. Hauser said.

Quality control of pacemakers is an urgent problem. Nationally, in the past 18 months, the Food and Drug Administration has listed more than 30,000 pacemakers as being potentially defective. Fortunately, very few patients at Rush have been affected by this problem.

Dr. Hauser also has initiated a system of testing pacemakers before implantation, a simple quality control measure that few medical centers employ on the false assumption that when the pacemaker is taken out of the box it is in perfect condition. During the past few months, the Medical Center has had to send back two pacemakers that turned out to be defective when tested just before implantation.

Dr. Hauser is working on the development of new pacemakers and, with scientists at the Illinois Institute of Technology Research



Kenneth Wu, M.D., in Coagulation lab.

Listening to the heart

Institute, is studying the effect of 60-cycle electrical fields, such as power lines and high voltage fields, to see how they affect pacemakers. He and his co-workers have found that the vast majority of pacemakers are designed so they can handle voltage fields, but that certain models can't. This information is being relayed to the manufacturers.

"No one in this country escapes arteriosclerotic disease," said George Hass, M.D., the Otho S.A. Sprague Professor, Emeritus, and former Chairman of the Department of Pathology.

"If we didn't have age-related change in the arterial wall, the amount of cholesterol in the blood would not be sufficient to produce occlusive or thrombotic disease. It is the degenerative changes that lay the basis for atherosclerosis," Dr. Hass said.

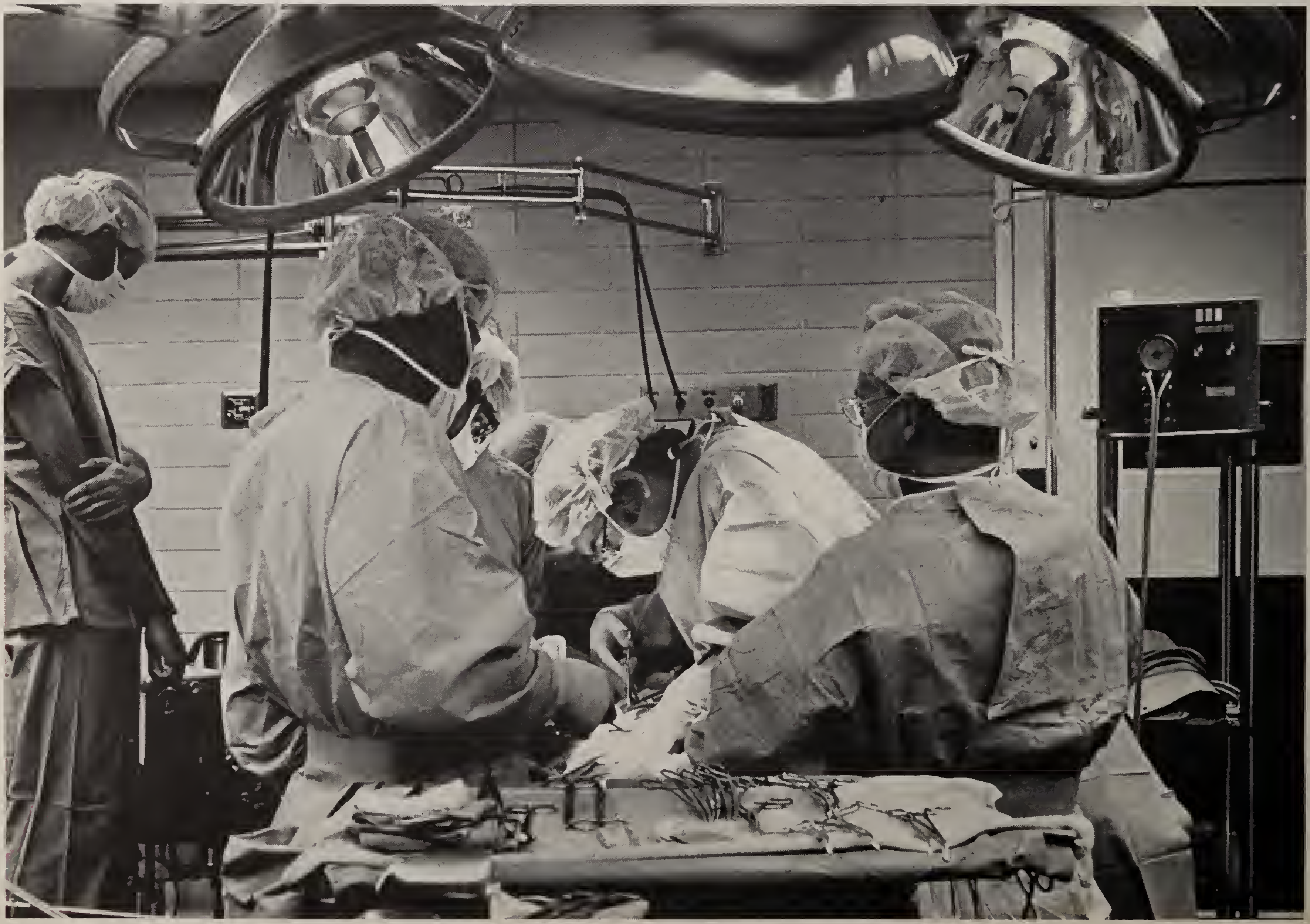
Stress is an important physiological variable, Dr. Hass believes. "Those populations that have the least stress are the least liable to have arterial diseases."

In a recent review of coronary artery disease, Dr. Hass pinpointed three factors that, based on his animal studies, influence the occurrence, distribution, and evolution of arterial lesions. They are hyperlipedemia, or an excessive amount of fats in the blood; calcific degeneration of the arteries; and a variable reaction to stress.

"Each of these three factors, when used alone or in dual combination, was innocuous. When used together, they often produced generalized calcified athero-arteriosclerosis with thrombosis, the incidence of which seemed to be mediated by genetic factors."

In his experiments with animals, Dr. Hass has found that "there is

In surgery



> *"As nurses, we try to talk to the patients. . . . We also work with the family. The patient looks to the family for support, but the family looks to the staff."*
>
> *– Karyn Holm, R.N., M.S.*

Karyn Holm, R.N., M.S., and Pamela Carlsen. R.N., M.S., check slides for the patient education videotape they have prepared.

something wrong in the adrenocortical and hepato-adrenal axis that causes degenerative arterial diseases." In animal experiments, he has tried ablation, partial ablation, and drug therapy to inhibit conversion of cholesterol to hormones in the adrenals. All of these efforts had the effect of metabolically quieting the animal and dramatically reducing artery disease. He also noted that people with Addison's disease, a disease of the adrenal cortex that results in suppressed adrenocortical function, almost never have atherosclerosis. Dr. Hass is continuing his studies on the role of the adrenocortical-hepatic axis in promoting atherosclerotic disease.

Philip R. Liebson, M.D., Associate Professor of Medicine, former director of the Medical Intensive Care Unit, is in charge of the Cardiology Section's education programs and is Acting Director of the Electrocardiography Unit. In addition, he supervises Cardiology education from the level of medical and nursing students, through residents and fellows, to continuing education for established cardiologists.

A major emphasis of the programs is self-teaching, through specially developed slide-tape presentations, audiotapes, video tapes, and descriptive manuals accompanying pathological specimens. A teaching carrel has been donated to the Section by the Center for Educational Resources. Anyone who wishes to study can come to the carrel and use materials, ranging from the simplest to the most advanced in a newly developed self-teaching unit.

Last year, Dr. Liebson instituted a heart sound system in the Medical Center's A.B. Dick Auditorium. This makes it possible for the heartbeats of patients brought to the auditorium or simulated heart sounds to be amplified into stethophones in the audience, so several hundred people can hear the same heart sounds simultaneously.

He is planning to develop mobile teaching modules to be sent to the Network hospitals. They could be kept in each hospital and used for self-teaching on a rotating, constantly renewed basis.

"Our main task is getting the vast amount of information systematized, so we can learn from it." When the total information from the Section becomes computerized, Dr. Liebson expects to use a great deal of it as teaching materials.

Dr. Liebson's personal research has focused on the use of noninvasive techniques to evaluate cardiac function both after myocardial infarction and in patients who have had coronary artery bypass surgery.

He also is involved in two studies to test the efficacy of certain drugs. As part of a national study, he is evaluating whether steroids, when given early during a myocardial infarction, can decrease mortality and morbidity. In another study, he is evaluating whether a new beta blocking agent that can decrease the work of the heart also can decrease the need for oxygen. If it can, there presumably would be less stress on the heart, and less anginal pain.

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Rush Network—Stronger Together

By Mary L. Kelly

•A woman living on the Mississippi River makes several trips a year to Chicago for multiple consultations and treatment not available at her community hospital in Galesburg.

•A newborn child in Chicago has a serious respiratory problem and must be taken immediately to a regional perinatal center, but a phone call reveals that all beds at the nearest center are occupied. The child is rerouted to a member hospital of the Rush Network in Oak Lawn, Ill.

•A physician in DuPage County suspects brain damage in a truck driver admitted to his hospital following a highway accident. A brain scan and other diagnostic support is called for and the patient is referred to Presbyterian-St. Luke's Hospital.

These three cases, multiplied by many more, illustrate how the Rush Care Network serves a population of up to 1.5 million persons throughout Northern Illinois by assuring them that resources can be organized to serve their needs, including in times of crisis.

Less dramatic, but in the long run of broader significance, is a growing stream of young men and women who are taking part of their training for careers in the health professions within facilities of this same Network. Their exposure to different types of practice in different localities will determine in good part where they elect to settle and serve. Since experience shows a correlation between where students receive their training and where they choose to practice, the Rush Care Network will, to a certain extent, be replenishing its own ranks. It also will produce enough personnel so that those who choose to leave the system will more than adequately be replaced by those coming in, assuring the Network of a sufficient supply of high-quality professionals.

The volume of students trained in the Network offers a basis for optimism:

Administrators from the Network hospitals met in January and February to discuss developing closer organizational relationships. Pictured at the January meeting are (left to right): John M. O'Shea, Vice President, Interinstitutional Affairs and Corporate Program Development, the Medical Center; James A. Campbell, M.D., President, the Medical Center; Harold A. Paul, M.D., Coordinator, Medical Affairs, Rush Network; Julius Newman, Copley Memorial Hospital, Aurora (visitor); and Mark Lepper, M.D., Vice President, Program Evaluation, the Medical Center.

Since 1973, more than 200 Rush Medical College students have traveled to Network community hospitals to complete tutorials and clerkships that are a vital part of their medical training.

More than 100 house officers (interns and residents) from Rush-Presbyterian-St. Luke's Medical Center and its affiliated hospitals have rotated within the Network to gain expertise in primary care specialties and exposure to patients with diverse problems related to their geographic, social, and economic backgrounds.

In 1975, a special program based on the AMA-recommended "Fifth Pathway" was established at Swedish Covenant Hospital in Chicago to enable Illinois residents who studied medicine abroad to prepare for practice in the United States. Rush Medical College was the first Illinois school of medicine to sponsor such a program after the State Legislature passed an enabling law.

The Rush University System for Health had its beginnings in 1968, when James A. Campbell, M.D., President of the Medical Center, submitted a report to the Illinois Board of Higher Education documenting a critical shortage and maldistribution of physicians and other health manpower in the state. The report provided strong impetus to the subsequent rapid expansion of the training of health professionals in Illinois.

The report found that less than a third of Illinois' medical school graduates in 1952, 1954, 1956, and 1960 had remained in Illinois to practice. An important factor that influenced physicians to practice in a particular area was the location of internships and residencies.

To ease the health manpower shortage and maldistribution, Dr. Campbell proposed that Illinois medical schools expand their enrollment and increase the number of internships and residencies by affiliating with hospitals and clinics in the state. Undergraduate and graduate medical students could get clinical instruction at these centers.

Steps first were taken to develop an educational system to train physicians, nurses, and other health science professionals. In September, 1971, the Board of Trustees reopened Rush Medical College. Rush University, which includes Rush Medical College, the College of Nursing, and the College of Health Sciences, was established in 1972.

An educational network of 14 colleges and universities in six states from Tennessee to Colorado was formed so students could take the first two years of their basic science training at a liberal arts campus, with the last two years of training completed at the Medical Center and the hospital network.

A special cooperative program has been developed within the educational network with Grinnell College in Iowa and Knox College in Illinois to enable students to complete the first year of their medical education on either of these campuses while enrolled in Rush Medical College.

"Studies have shown that these students do as well in their later medical training as students who start at a big city medical center," said Leo M. Henikoff, M.D., Acting Dean, Rush Medical College.

The enrollment projection for Rush Medical College in 1971 was 100 students per class by 1975 — 120 freshmen are now enrolled. The enrollment projection for the College of Nursing was 200 students per class in the baccalaureate program and 100 students in the master's program — 114 juniors, 209 seniors, and 94 graduate students are now enrolled. The College of Health Sciences, which accepted its first class this fall, already has 61 students enrolled, with a projected enrollment of 75 by the fall of 1977.

The next step in development was to form a network of affiliated hospitals. "Our reasons for forming a voluntary hospital network were traditional in providing training for our students in different health care settings," said Mark Lepper, M.D., Vice President of Corporate Program Evaluation at the Medical Center. "What makes our system unique is our goal to make high-quality health care available to a diverse cross-section of the population in urban, suburban, and rural areas, based on their needs rather than those required solely for instruction.

"We chose hospitals that would balance our system," Dr. Lepper said. "Their primary and secondary beds complement our supply of tertiary beds. They also provide for our students a complete laboratory in which to learn medicine in a variety of settings."

A two-way street, affiliation offers benefits to the community hospitals in several forms. "First, it is a means of recruiting, possibly 10 years down the road, physicians as members of its medical staff. Next, having house staff aboard helps the hospitals meet some of their patient care obligations. To compete, hospitals have to be affiliated with a medical school," said Dr. Lepper. "The Rush System also enables us to offer specialized services to the community hospitals that they otherwise would not be able to offer their patients, avoids duplication of equipment, and provides cost savings in a variety of administrative and clinical shared services."

Access to health care in the Rush System is voluntary and is provided on the basis of individual choice by private physicians and their patients. About 5,000 beds, with 500 tertiary care beds located at the Medical Center, are required to meet the needs of approximately 1.5 million people. These have been distributed throughout all strata of society, from the crowded inner city to the sparsely populated rural areas. The Rush System will care for the needs of from 100,000 to 200,000 medically underserved people in the inner city and an equal number in rural areas.

Since 1971, nine hospitals representing 4,000 beds have signed formal affiliation or association agreements with Rush. Chicago hospitals include Swedish Covenant, Bethany Brethren/Garfield Park, Mount Sinai Hospital Medical Center, and Schwab Rehabilitation Hospital. Inner suburban hospitals include West Suburban, Oak Park; Community Memorial, LaGrange; and Christ Hospital, Oak Lawn. The outer suburbs are represented by Central DuPage, Winfield, and the rural area by Cottage Hospital, Galesburg.

Rounding out the hospital network are Presbyterian-St. Luke's Hospital and the Sheridan Road Pavilion, a branch hospital operated as an integral part of the Medical Center.

Mile Square Health Center, Inc., located in an inner-city black neighborhood about four blocks from the Medical Center, signed an affiliation agreement in 1975. The Medical Center provides consultation services to Mile Square, and Mile Square physicians and staff are eligible for staff privileges at Rush. In addition, Mile Square is a source of inpatient referrals to the Medical Center. Thus there has been a successful model developed to provide appropriate ambulatory care while reducing duplication of facilities and expensive services.

Mile Square originally was developed by the Medical Center under an Office of Economic Opportunity grant study in 1967. As the program developed, it was possible for Mile Square to become an autonomous, community-controlled facility.

Ambulatory care services also have been expanded at the Medical Center by the establishment of ANCHOR, a health maintenance organization, and by the addition of space for solo and group medical practices based at the Medical Center. ANCHOR was formed in 1971 and now has more than 15,000 members. It has two branch offices in Chicago's southern and northwestern suburbs and one on Chicago's north side near the Sheridan Road Pavilion. Space for solo and group medical practices was expanded by adding three floors to the Professional Building in 1971.

By 1975, the Rush System had matured to the point that a special office was needed to coordinate existing programs and develop new ones. The Board of Trustees formally established the Office of

Interinstitutional Affairs and Corporate Program Planning in November, 1975, for this purpose.

Among the Office's goals are to (1) research existing efforts in other developing health care systems to determine which ones will improve Rush's system, (2) determine the organizational resources and commitments that Rush should make to and ask of its fellow institutions, and (3) identify outside constraints in the legal, economic, political, and social areas.

Recent federal legislation (Health Planning and Resource Development Act, PL 93-641) promotes consolidation, centralization, and geographic integration of health services. "The planning and analysis that have formed our corporate objectives and basis for the Rush System since 1968 are compatible with this new legislation," said John M. O'Shea, Vice President, Corporate Program Development, at the Medical Center.

In providing maximum benefits to the affiliated hospitals and the Medical Center, Rush hopes to develop systemwide shared services in administrative support and clinical support areas, a uniform comprehensive medical information system, contract management of health care institutions, and education of professionals in the fields of medicine, nursing, and health sciences.

The level of involvement among institutions depends on the goals of each and the resources they are willing to commit. Christ Hospital, Mount Sinai Hospital Medical Center, and Schwab Rehabilitation Hospital have signed agreements of association.

These agreements enable a more comprehensive approach to defined goals in residency programs, medical student programs in basic clerkships, and other features. They also set the stage for fuller exploration of such mutually beneficial activities as shared services, shared information, and shared patient care programs.

Shared services have been developed at Network hospitals in several areas, including laboratory testing, perinatal care, cancer treatment, renal dialysis, rotation of medical and nursing students, continuing education for health professionals, and contract management.

Presbyterian-St. Luke's Hospital began conducting specialized laboratory tests about 18 months ago for Galesburg Cottage and Christ Hospitals. Because these hospitals lacked the facilities to conduct the tests, they had used the services of laboratories as far away as Minnesota and California. The new system is faster and less costly, with lab results sent via a telecopier to each hospital within 24 hours of receiving the lab specimens.

In 1974, the Medical Center was designated a Regional Perinatal Center, one of nine in Illinois. The Perinatal Center provides medical care to high-risk obstetrics and newborn patients and provides continuing education services to its "feeder" hospitals. The state designated feeder hospitals as a means of providing all levels of care to high-risk mothers and infants. Ten feeder hospitals, located in the south and southwestern Chicago suburbs, refer patients to the Medical Center for tertiary care.

Christ Hospital, an associated hospital in the feeder system with Rush, recently signed an agreement to become a subunit of the Perinatal Center. Two other Network hospitals, Swedish Covenant and Mount Sinai, are among the feeder hospitals assigned by the state. A coordinator has been hired to provide continuing education services in perinatal care to the feeder hospitals.

Cooperative programs in cancer treatment have developed in the form of phone consultations between Network physicians and senior staff physicians at Rush; physical consultations, in which a patient is either referred to Rush or is visited by a Rush staff physician at a community hospital; tumor conference participation by Rush senior staff at Network hospitals; and the establishment of a comprehensive, uniform tumor registry.

"Cooperation with the Network is a must if we are to maintain an educational training program and use economically the equipment required in specialized cancer treatment," said Frank R. Hendrickson, M.D., Chairman of Therapeutic Radiology and Director of the Rush Cancer Center at the Medical Center. "Physicians must see enough cases to maintain their skills in managing cancer, and the specialized equipment must be used at a sufficient volume to be cost feasible. The

Others attending the Network meeting in January included (left to right): Vernon Forsman, Administrator, Community Memorial General Hospital; Harold E. Springer, Administrator, Swedish Covenant; Silas M. Weir, Assistant Vice President, Interinstitutional Affairs, the Medical Center; Yogi Mahendra, Assistant Administrator, Mount Sinai; Murray Berg, Executive Director, Schwab Rehabilitation; and Howard Jones, Vice President, Administrative Affairs, and Assistant Secretary, the Medical Center.

population base of the Rush System, 1.5 million people, is about the number necesary," said Dr. Hendrickson.

Less than half of the patients treated at Rush come from the Medical Center itself; the majority are referrals from community hospitals.

A comprehensive tumor registry, with all of the Network hospitals using the same data system, became operational on January 1, 1977. This registry also is linked to a statewide tumor registry being developed by the Illinois Cancer Council to provide regional cancer information.

The Rush System tumor registry records data from approximately 5,500 cancer patients each year, more than one-fourth of the cancers seen in the metropolitan Chicago area.

"The Network hospital system has the capability of giving outstanding information on the stage of disease at the time of diagnosis and the environmental or epidemiological factors that influence the development of cancer," Dr. Hendrickson said.

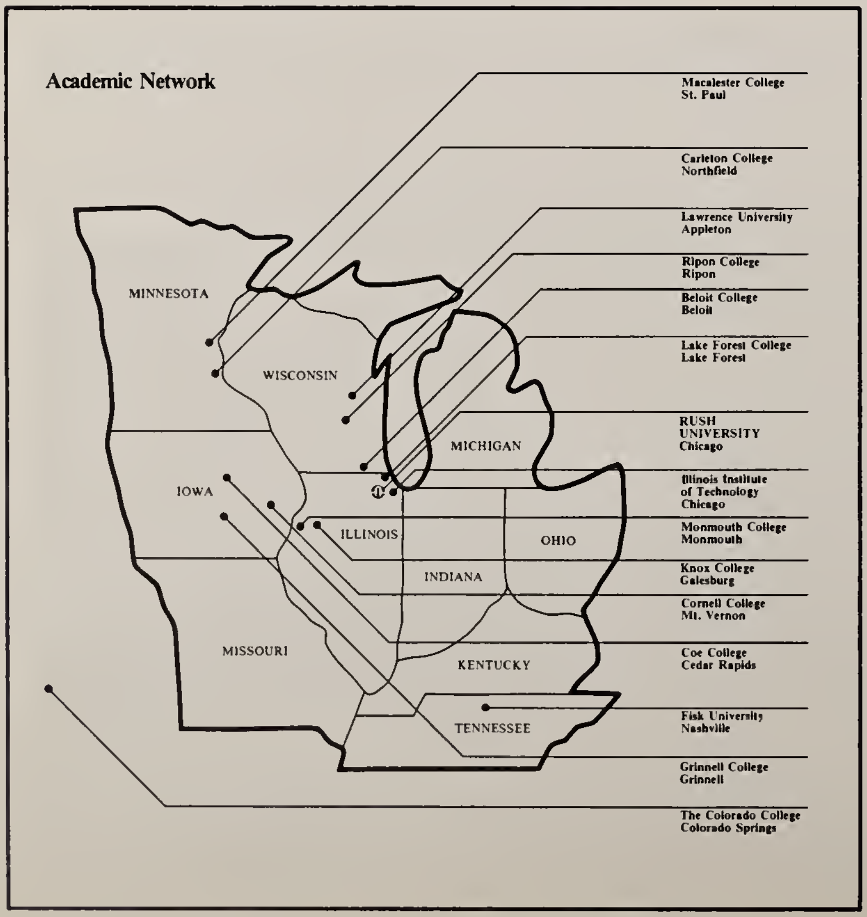
A special program was implemented at the Medical Center by the Rush Cancer Center to ease the burden on cancer patients who need evaluation by physicians from more than one discipline. Every Thursday morning new gynecology patients can have a consultation with a gynecologist, radiation therapist, and medical oncologist as part of their coordinated evaluation for management recommendations. This service is available for breast cancer patients on Tuesdays, and will be extended to other areas as manpower permits, Dr. Hendrickson said.

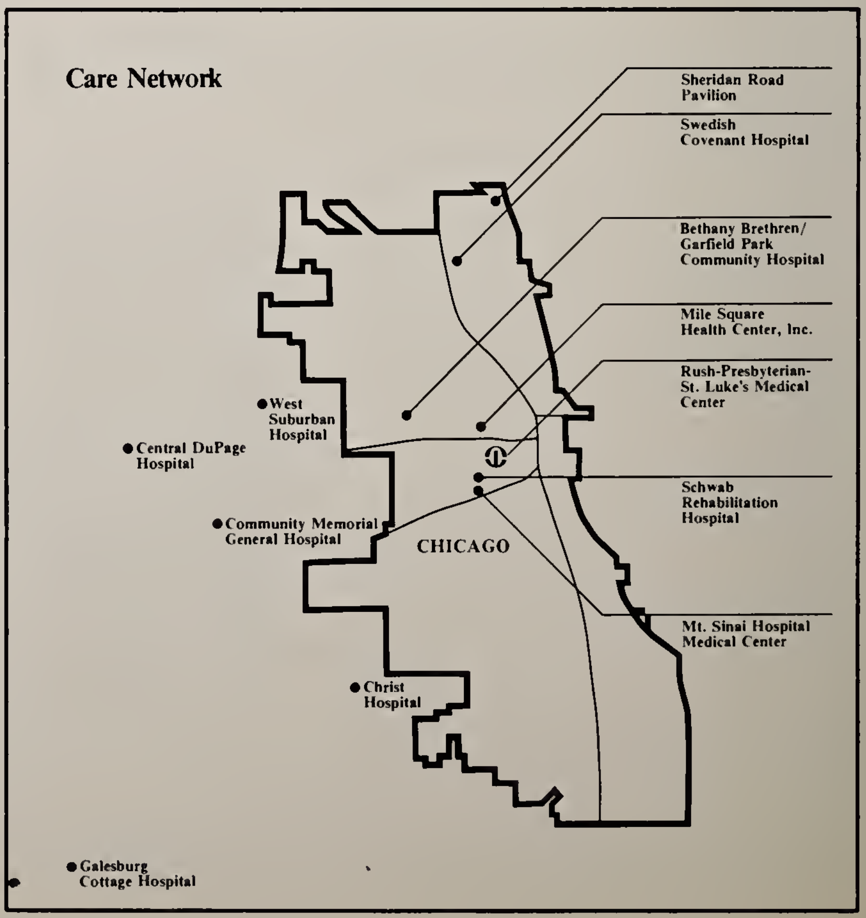
Kidney patients may be transferred to the Medical Center for transplants under an agreement with West Suburban Hospital. Patients receive dialysis treatment at their community hospital and are referred to the Medical Center for specialized treatment and transplants. Senior nephrology staff from Rush make rounds at West Suburban, and West Suburban house officers can rotate to the Medical Center for training in this specialty.

Several cooperative educational programs have developed at the undergraduate and graduate levels in medicine and nursing. These include: rotation of medical students in the community hospitals for clerkship training; rotation of house officers throughout the Network for specialized training; establishment of primary care residencies; the "Fifth Pathway" program for Illinois graduates of foreign medical schools; clinical training for nursing students in psychiatric care; and continuing education for health professionals.

Harold A. Paul, M.D., Coordinator of Network Medical Affairs, said, "It is desirable that we develop experiences for medical students in clinical settings different than the university hospital. With the growing enrollment of Rush Medical College and the growing potential of the Network, we have high hopes of expanding our capability so students have an adequate number of quality clerkships and a broader choice in the selection of quality preceptorships."

Joanne Ryan, Ph.D., Network Nursing Coordinator, said, "Because clinical resources are scarce, we must develop programs in Network hospitals that will give students the breadth of experience they need to get a high-quality nursing education." Programs have been developed in psychiatric nursing for undergraduate and graduate nursing students in cooperation with Mount Sinai. Graduate nursing students


Academic Network
MINNESOTA
WISCONSIN
MICHIGAN
IOWA
ILLINOIS
OHIO
INDIANA
MISSOURI
KENTUCKY
TENNESSEE
Macalester College St. Paul
Carleton College Northfield
Lawrence University Appleton
Ripon College Ripon
Beloit College Beloit
Lake Forest College Lake Forest
RUSH UNIVERSITY Chicago
Illinois Institute of Technology Chicago
Monmouth College Monmouth
Knox College Galesburg
Cornell College Mt. Vernon
Coe College Cedar Rapids
Fisk University Nashville
Grinnell College Grinnell
The Colorado College Colorado Springs


Care Network
Sheridan Road Pavilion
Swedish Covenant Hospital
Bethany Brethren/ Garfield Park Community Hospital
Mile Square Health Center, Inc.
Rush-Presbyterian-St. Luke's Medical Center
Schwab Rehabilitation Hospital
Mt. Sinai Hospital Medical Center
West Suburban Hospital
Central DuPage Hospital
Community Memorial General Hospital
CHICAGO
Christ Hospital
Galesburg Cottage Hospital

participate in family practice at Swedish Covenant and West Suburban Hospitals.

"Future nursing programs within the Network are under study," Dr. Ryan said. "We are collecting data and identifying areas of common concern before initiating any further programs. We want them to be high-quality programs that are mutually beneficial to the cooperating institutions. Network hospitals have expressed interest in developing programs in continuing education, inservice education, and prototypes of nursing service delivery."

Several steps have been taken to develop graduate medical education. Three new family practice residencies have been approved at Christ, Swedish Covenant, and Community Memorial, and the family practice residency program at West Suburban has been strengthened.

A chairman was named in August, 1976, in the recently established Department of Family Practice at the Medical Center. "The Department will have as one of its goals the development of physicians with special skills that will allow them to become leaders in family practice programs," Dr. Paul said.

Now in its second year, eight persons are enrolled in the "Fifth Pathway" program. All have selected and have been accepted for residencies in Illinois hospitals. This means that, in two years of operation, 12 "Fifth Pathway" participants have gone to residencies in Illinois hospitals. All intend to practice in Illinois and all but one have selected a residency consistent with primary care goals.

"Rational manpower planning goals require careful attention to the number and specialty distribution of residencies," Dr. Paul said. "We are well within reach of our goal — defining 120 resident positions per year in our hospital system. The next objectives will deal with quality recruitment, coordination of resources, and a more precise decision about distribution among primary care specialties."

Contract management services were provided to PADCO Community Hospital, located in Southern Illinois, from August, 1975, to January, 1976. Because of critical management problems, PADCO faced possible closure. At the request of the Illinois Department of Public Health, Rush managed PADCO on a day-to-day basis, with efforts being made toward the acquisition of grant and loan monies for debt consolidation, recruitment of a permanent management team, and the agreement to provide back-up management services as needed. Administrative consulting services are now being provided to the administration that was recruited by the Medical Center for PADCO.

"In addition to contract management, several other plans in administrative sharing have been discussed with individual Network hospitals that would improve and expand services through cooperative arrangements," said Silas Weir, Assistant Vice President, Corporate Program Development.

These plans include group purchasing of services from one another, sharing in the cost of joint ventures, joint establishment of separate service corporations, and establishment of new corporate alignments through consolidation or the use of umbrella corporations.

Administrators from the Network hospitals met at the Medical Center in January and again in March to discuss the feasibility of sharing services in such areas as laundry, computer management, and business, and consulting services in the areas of affirmative action, labor relations, and equipment planning, following the guidelines that cooperative programs should complement existing programs, be advantageous to participants, improve and augment services and, whenever possible, reduce costs.

"We are stronger together than apart in terms of working with government agencies and improving our individual institutions," Mr. Weir said.

The Rush University System for Health is a fresh approach to meeting the health care needs of the nation. Its success hinges on the ability of an academic medical center to combine all of the health care functions necessary to serve a broad-based geographic and socioeconomic population. If it is successful, it will become a national model for delivering health care.

As one administrator of a teaching hospital in Chicago told Montague Brown and Howard L. Lewis, authors of a recently published book, *Hospital Management Systems:* "I wish I could get my board and the university to back a move like that for us. Rush will be so far out ahead of us if they pull off these network arrangements that we'll never really get back into the game."

Phase I students of Rush Medical College who complete their first year of medical school on the Knox College campus in Galesburg, Ill., receive clinical experience at Cottage Hospital. Richard Flacco, M.D. (center), attending physician at Cottage Hospital and Assistant Professor of Family Practice, Rush Medical College, instructs Phase I students Robert Glinert (right) and Martin Fortier.

Medical Staff and Faculty Development

by William F. Hejna, M.D.,
Senior Vice President

At the beginning of the decade of the 70s, significant changes were imminent at Rush-Presbyterian-St. Luke's Medical Center. The opening of a medical college was at hand, construction programs were in progress, including the addition of four floors, to Presbyterian-St. Luke's Hospital Jelke Southcenter building and the top six floors of the Professional Building, and planning was underway for a new Academic Facility.

Before my appointment as vice president for medical affairs and dean of Rush Medical College in 1973, I had been associate dean in the office of surgical sciences and services, where it had been my habit to report to the surgical faculty on the aforementioned changes and to outline my own intentions. A major concern of mine had been faculty/staff development, the business of bringing people together. This represented to me the key variable in whatever successes might be claimed (or failures acknowledged) and, after six years, it still is.

As a starting point for this discussion, may I quote a short portion of my report to the surgeons on June 17, 1971:

"A serious point of discussion relates to the existing situation in the surgical staff/faculty. Among the surgical departments that admit patients to the hospital, there are 118 active members. In 1966, there were 156.

"Of the 118, only 11 are below the age of 40, and 37 are between 55 and 70.

"On any given day, the man-by-man census count indicates that 60 per cent have three patients or less in the hospital.

"Twenty-four admit significant numbers to other hospitals, and 80 per cent of the members of three departments have appointments in a second hospital.

"Thirty-one of the 37 senior staff, ages 55 to 70, practice solo.

"These points warn of a manpower crisis unless appropriate definitive steps are taken to avoid it. A real danger lies in the fact that it would be insidious. One could be caught with a serious struggle, having found five years from now that it had already happened. This situation is critical to our long-range health, and we must have our goals clearly in mind. I shall institute a four-year development plan, at which time an in-depth critical review of our progress should be made."

As I look back at that report of numbers, I am amazed at how a thrust so vital could be approached in so unsophisticated a way. The finger was on the right key, but I didn't see that there was a whole piano to be played. Suffice it to say that at the beginning my concern mirrored more a standard hospital asking itself "where have our doctors gone?" and not a private sector university hospital, with multiple colleges, anticipating explosive expansion in all areas.

It did not take long to broaden the thinking to include other considerations, such as the pattern shift in location of practice among *all* of the departments, a comparison of referral patterns, and an assessment of the change in hospital-based (*i.e.,* salaried) physicians and what impact that would have on our stated mission.

Broadening the scope of the examination showed that, whereas in surgery and obstetrics there were 23 active practitioners over age 60 and 37 over age 55, in medicine and pediatrics there were six active practitioners over the age of 60 and 27 over 55. Thus, the problem was not confined to surgery. It also was found that in medicine/pediatrics there was a tremendous shift of practice to the Medical Center between 1966 and 1971. Specifically, the number went from 39 to 74, a 90 per cent increase; in surgery, the number went from 41 to 56, a 36 per cent increase. This suggested a change in the types of practices that might evolve. During the same years, the number of physicians on salary in medicine increased from 25 to 50 and in surgery from 13 to 28. Thus, in 1971, 78 of the clinical staff were on salary. These sorts of changes prompted questions such as, "what will be the place of the private general internist?"; "how will patient referral patterns from the outside be developed?"; and "what is the optimum ratio of hospital-based to private, voluntary physicians?"

The following data will demonstrate that the manpower changes during the period since my tenure as dean have, indeed, been explosive. They also will demonstrate that this institution has been able to meet the challenges presented to an aging staff, which would see changes from no medical school to a fully functioning one, an increase from 12 independent residency training programs to 22, an increase from 24 departments to 30, and from 26 sections in those departments to 63. There also have been increasing care demands from 850 beds to 1,150 beds, and tremendous qualitative demands in the direction of tertiary care.

Let me start with leadership:

(1) In the office of surgical sciences and services, there are 13 departments; nine have department chairmen appointed during this period and one is searching.

There are 24 sections in those departments, and 19 have new chiefs.

(2) In the office of medical sciences and services, there are nine departments; four have chairmen appointed during this period, and one is searching. In those departments, there are 29 sections with 19 new chiefs.

(3) There are eight science departments; six have chairmen appointed in this period, and two are searching. In those departments, there are 10 sections with nine new chiefs.

These changes in leadership are astounding. Every organization, from industrial to political to athletic, looks to its leadership for success and we are no different. What we must understand is what success *is* in this health field and how much time it should take to achieve it. The chairmen as managers and their departmental organizations, however large or small, are the cornerstone in this effort. We must learn better ways to measure and document productivity.

A look at what has happened to our population of active physicians might focus more sharply on what the chairmen have been accomplishing and may explain some of our day-to-day difficulty in recognizing tradition, maintaining communication, and simply looking around for the "good old days." This should not be interpreted as a call for their return.

In 1971, there were 449 active practitioners on staff. In 1976, there were 563, a 22 per cent net increase. We lost 135 during the same period, thus 55 per cent of our current practicing staff were not here five years ago.

There are many practical implications inherent in this situation on both the plus and minus side. For my part, the record speaks for itself and I could not be more pleased. Since I earlier made a point of age, you may be interested in the fact that in 1971 the average age among all of us was 55. In 1976, it was 48, a drop of seven years (notwithstanding the fact that all of us were five or six years younger then).

I also mentioned earlier the number of people on salary, and I would like to put that in perspective. Among all faculty in the Medical Center in 1971 (*i.e.*, both scientists and clinicians), there were 248 receiving salary part or full-time, representing 66.7 per cent of the total. In 1976 there were 281, an increase of 33 people, but now representing only 52.2 per cent of the total. This datum addresses two important questions: Are we paying more than lip service to achieve our primary mission of patient care, and are we moving in the direction of strengthening the private sector? These can be answered in the affirmative.

In general, although we are growing we are moving in the direction of balance between private or voluntary practitioners and hospital-based physicians. In part, this disproves claims that young general surgeons can't make it here because medicine is going all full-time.

In the department of internal medicine in 1970-71 there were 106 active staff, with 56 doing general private practice. In 1976, there were a total of 147, with 73 doing private practice. This is an increase of 40 per cent in total, with 50 per cent of the new total in private practice (just as in 1971). Further, whereas the number of senior and associate attendings has remained the same—around 70 to 75—the number of assistant and adjunct attendings has increased from 35 to 71.

This is a very healthy quantitative situation and I am hopeful that the trend will continue.

In the department of general surgery in 1970-71 there were 32 active physicians, with 24 (75 per cent) in private practice. In 1976 there were 22, a decrease of 30 per cent, with 13 in private practice, a decrease from 75 per cent to 58 per cent. In 1970-71, there were 24 senior and associate attendings compared to 10 in 1976, and eight assistant attendings compared to five in 1976. This is a startling difference in numbers from medicine, as it would appear that the loss of senior people is not being compensated by a gain in juniors. There also is an interesting qualitative difference. In medicine there is a pluralistic approach, with solo practitioners, groups, service corporations, and a prepaid group. In general surgery, all members practice alone with the exception of two men who practice as partners.

The over-all situation may be colored by the notion that other surgical disciplines are on their way to the complete erosion of general surgery. In any case, for purposes of comparison with internal medicine, it may make more sense to combine the data from general surgery with neurosurgery, plastic surgery, orthopedics, cardiovascular-thoracic, and E.N.T. Among those surgical departments in 1970-71, there were 65 active surgeons, with 53 in practice (about the same as the 56 in medicine). In 1976 there were a total of 52, with 49 in practice. This is a 20 per cent decrease in total over the five years, but only a slight drop in practitioners. There were 43 senior surgeons in these departments in 1976 as compared to 50 then, so that on the whole the losses and gains seem more appropriately placed. Departments other than general surgery seem to be developing in a pattern similar to internal medicine. As a footnote, the total number of admitting surgeons in 1976 was 123 as compared to the 118 of 1970.

What one must guard against in all of this are erroneous conclusions. We have a situation in which a stable number of practicing surgeons are serving the patients of increasing numbers of internists. This decreased number must also meet academic needs and administer the system. Considering that the numbers of operations have increased substantially, including those in general surgery, surgeons occupy more beds and have longer waiting lists, their resident board certification record is high, undergraduates are doing as well in surgery as in medicine on the national board exams, and the faculty contracts show equalization in administrative activities, one must ask, why? Is the productivity of surgeons higher or were they fat before? Is some important function, such as research or ambulatory care, being sacrificed to get done what is being done? What are the potential dangers? I feel that surgery is running somewhat lean in terms of manpower, perhaps particularly in general surgery but undoubtedly in other areas.

There are other questions, such as why primary general medicine continues to have an image problem. Perhaps we should have a section of general medicine, with recognized leadership and stated goals. Is this the time to compound our strengths by creating combined medical/surgical units, such as the neurological division, the genito-urinary division, the cardiovascular division, and so on? Possibly that's too tough for now, but we must and will find better methodologies to stay ahead.

Other departments have shown remarkable stability, balance, and even growth, such as cardiovascular-thoracic surgery. Some have gone through tremendous changes and now are stabilizing. Anesthesia, for example, has 19 active members, only three of whom were here five years ago.

A footnote might be added with respect to quantitative analysis of other professional personnel:

(1) In the house staff category, we have increased from 249 in 1972-73 to 290 in 1976, an increase of 16 per cent. Changes were just about the same in medical and surgical departments. Data prior to that date is not comparable because so many of our programs were a part of the University of Illinois.

(2) In the nursing category, we have increased from 242 registered nurses in 1971 to 862 in 1976, a very impressive record.

(3) In the management staff category, there are 44 individuals. These include managers in every element of the Medical Center—finance, hospital administration, public relations, the colleges, legal, and so on. Among these 44 positions, 26 individuals were not on board five years ago.

Some analyses of faculty activity for which the institution *is paying* will give you some idea of what we are buying, what it costs, and, in some ways, how we compare with other medical schools in the United States.

First, our total budget for direct salary in medical and surgical sciences and services is $8,100,000. In each office, about half is for academic activity, such as instruction, research, and administrative tasks related to the college. The other half is for nonacademic activity related to direct and indirect patient care. Our best estimate is that in 1970 academic activities were about 30 per cent. Then there was a dramatic increase over three years. A definite leveling off has occurred during the past three years, when there have been contracts to study.

- Among the professors in medical and surgical sciences and services whom we pay, the average salary is $42,765 for an hourly rate of $19.54. They spend 49 per cent of their time in academic activity and average 52 years of age.
- Associate professors in medical and surgical sciences and services average $41,540, or $17 per hour, doing 48 per cent academic activity. They average 44 years of age.
- Assistant professors in medical and surgical sciences and services average 37 years of age and get paid $34,000 for an hourly rate of $14.60, doing 46 per cent academic work.
- Instructors in medical and surgical sciences and services average $20,000, or $11.35 per hour, doing 40 per cent academic work, and are 32.6 years old on the average.

All of these rates are above the 50th percentile nationally for similar ranks doing similar work. Overall, the salaried faculty members in medical and surgical sciences and services average $36,500 and are 42 years old. Eighteen per cent of their time is spent in instruction, 22 per cent in administration, 15 per cent in research, and 40 per cent in either direct or indirect patient care. On the average, 5.3 per cent of their work week is contributed time.

The rank split includes 26 per cent professors; 20 per cent associate professors; 44 per cent assistant professors; 9 per cent instructors; and 2 per cent other ranks.

Our student-to-faculty ratio is 1.9 students to each salaried full-time employee. There is one student to each two faculty on campus (salaried and nonsalaried), and there is one student to each 2.8 faculty in the entire system. Among all medical schools in the U.S., we rank 82nd in numbers of full-time faculty, both clinical and scientific, and our average salary ranks 40th. In the percentage of sponsored program revenue spent for salaries, we rank 44th. Incidentally, we are teaching students who had average M.C.A.T. science scores of 606, and they rank 50th of 112 schools.

Another faculty statistic that bears mention is that 19 per cent of the medical college faculty are black, hispanic, or asian, and 15.4 per cent are women. In the College of Health Sciences, 25.8 per cent are women, and 7.2 per cent are members of a minority. During the past year, 27 per cent of new appointments were women, and 27 per cent of new appointments were minority. Obviously, our effort in this regard is improving.

Assuming it is possible to assimilate all these numbers, you might then legitimately ask the question, "What is the point?"

There are several answers, but the most important is that it is simply not possible to accomplish our primary and multiple secondary goals without manpower planning and development. Obviously, this has been particularly true for this institution during this period in its history. It is clear that although we may level off in some quantitative parameters, the job is by no means finished. Reassessment must be constant and clear goals must always be kept in mind. Building on our strengths and finding better ways to measure productivity are two ways of reaching goals which are, after all, not only ours but those of the society which we seek to serve.

RushRounds

Anorexia Nervosa Patients: "Model" Kids Who Starve Themselves

While the vast majority of Americans are fighting to keep pounds off, a small but significant number literally are starving themselves to death. They suffer from a psychiatric illness called anorexia nervosa, the pathologic pursuit of thinness.

The disease usually appears in the early to middle teens and affects young women almost 10 times more often than it does young men. In severe cases, anorexia nervosa patients lose from 30 to 50 per cent of their body weight, with 15 to 20 per cent of this seriously ill group dying of complications from infection, renal failure, or heart disease.

James L. Cavanaugh, Jr., M.D., Clinical Director of the Department of Psychiatry at the Medical Center, has been interested in the problems of anorexia nervosa for some time. "Most are model kids—good in school, successful in athletics, popular with their peers, and seen as 'good children' by their parents."

Psychologically, however, they are in a state of turmoil and rebellion. As they enter into adolescence they feel terrible uncertainty about themselves, are affected by a pervasive feeling of ineffectiveness, and, although they accomplish much, perceive their accomplishments only as responses to the desires of their parents and society at large. They begin to show rebellion in an atypical, primitive, and possibly lethal way—by not eating.

Many patients simultaneously go on strange diets and develop a preoccupation with cooking, elaborate recipes, and other food-related subjects. They often go on "hunger strikes," then go on eating binges and induce vomiting when nobody is looking. Some take large doses of laxatives, diuretics, or use other measures aimed at accelerating weight loss. When 25 per cent of the age- and height-adjusted weight has been lost, a medical emergency exists.

Many also are hyperactive. While an average person might walk from two to four miles a day, anorexia nervosa patients might walk as much as 10, with no increase in appetite. "They also have a lot of difficulty with body image—even as they continue to lose weight, they see themselves as being of normal weight or still slightly overweight," Dr. Cavanaugh said.

Most of the patients referred to Dr. Cavanaugh are brought by their mothers. They usually already have been seen by a family physician who has completed extensive tests to find a reason for their weight loss and cessation of normal menstrual periods. The test results usually are within normal limits.

"One very interesting anorexia nervosa patient was referred to me by the renal service of a large Eastern hospital because doctors could not understand her persistent low serum potassium level," Dr. Cavanaugh said. It ultimately was shown that the patient was causing the problem through a combination of inducing vomiting, taking diuretics without prescription, and using multiple laxatives and frequent enemas to lose weight.

Treatment varies with the severity of the case. Those who have lost significant amounts of weight (25 per cent or more) must be hospitalized. On occasion in the severely ill, feeding through a tube to the stomach or hyperalimentation through the subclavian vein in the neck is necessary. When the patients gain enough weight to get out of immediate danger, they still must receive long-term psychotherapy, usually on an outpatient basis.

James L. Cavanaugh, Jr., M.D.

A specific type of treatment for anorexia nervosa patients employs behavior modification techniques. "Because many are hyperactive and need space to move around, we may tell them, for example, that they have to stay in their rooms unless they show a weight gain of one-half pound per day," Dr. Cavanaugh said. By the use of correctly applied principles of positive and negative reinforcement, it is possible to get a patient to gain weight without continuing to focus on the specifics of diet and calorie counts.

The problem that remains, however, is keeping the gained weight once the patient is discharged from the hospital. At best, techniques employed during hospitalization appear to get the patient out of a medical emergency, but it is the long-term psychotherapeutic relationship that is essential for sustained improvement.

The prognosis for many anorexia nervosa patients over time is good. "What usually happens is that they grow up, move away from home, enter into close personal relationships, gain weight, and get married. However, some never improve or go on to have episodic recurrences during the childbirth years or in middle life," Dr. Cavanaugh said.

Floyd Davis, M.D., Awarded Grant for Multiple Sclerosis Studies

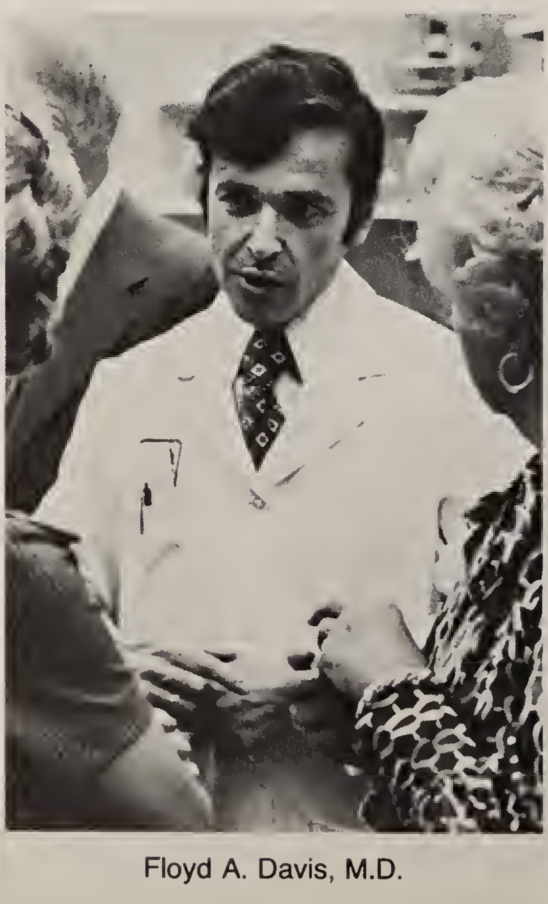
The actions of various drugs used in the treatment of patients with multiple sclerosis (MS) will be studied under a grant awarded to Floyd A. Davis, M.D., Director of the Multiple Sclerosis Center at the Medical Center and Professor and Senior Attending Physician in the Department of Neurological Sciences.

The Multiple Sclerosis Society awarded the $202,216 grant.

Dr. Davis plans to direct two separate projects to investigate drugs that have been used in the treatment of MS, a crippling disease of the central nervous system.

Effects of ACTH will be investigated in one project. This drug is known to produce a mild improvement in MS patients. "We are trying to learn what it is about the drug that is beneficial so we can try to amplify the improvement it brings about," Dr. Davis said. Some 10 to 12 actions of ACTH potentially are beneficial, according to Dr. Davis.

Dr. Davis and his associates will study 150 patients at the Multiple Sclerosis Center who are showing active changes in their disease. They will be given the drug intravenously along with other agents that will boost specific actions of the drug to determine which specific actions are the most beneficial.



Floyd A. Davis, M.D.

The second study involves investigation of the effects of certain drugs in frogs that have MS types of lesions. The aim of the study is to determine whether these drugs improve the way in which nervous tissue conducts impulses in multiple sclerosis. The symptoms that MS patients develop largely are results of defects in impulse conduction in the nerve membranes.

Trustee Elections Held; New Senior Vice President Roles Announced

Nine new Trustees and one Life Trustee were elected to the Board of Trustees of the Medical Center at the annual meeting in November, 1976, and the quarterly meeting in February, 1977.

Elected Voting Trustees in November for three-year terms for the first time were: Clayton Kirkpatrick, Vice President and Editor, Chicago Tribune Company; George V. Myers, President, Standard Oil Company (Indiana); and two Past Presidents of the Woman's Board of Rush-Presbyterian-St. Luke's, Mrs. F. Richard Meyer III, and Mrs. Calvin D. Trowbridge. Elected for the first time as Annual Trustees were: Mrs. Thomas A. Kelly, current President of the Woman's Board, and Michael M. Mitchel, Chairman of the Board of Trustees, Mount Sinai Hospital Medical Center.

John P. Bent, Chairman, Hartford Plaza Bank, was elected as Life Trustee. Mr. Bent's election brings to 21 the number of individuals who hold that distinction.

Elected Voting Trustees in February for three-year terms were: Gordon R. Corey, Vice Chairman and Director, Commonwealth Edison Co.; James W. DeYoung, Assistant to the President of Baxter Travenol Laboratories, Inc.; and Donald G. Lubin, Partner in the law firm of Sonnenschein Carlin Nath and Rosenthal.

James A. Campbell, M.D., announced at the annual meeting that new responsibilities were being assigned to the Medical Center's two Senior Vice Presidents, Donald R. Oder and William F. Hejna, M.D.

Reporting to Mr. Oder will be the officers in charge of Financial Affairs, Administrative Affairs of Presbyterian-St. Luke's Hospital, Legal Affairs, the Office of Affirmative Action, the Office of Research Administration, and Health Care Finance.

Reporting to Dr. Hejna will be the Vice President for Medical Affairs and Dean, Rush Medical College, and the officers in charge of Graduate and Continuing Medical Education, Interinstitutional Affairs and Special Corporate Programs, Faculty Affairs, Academic Affirmative Action, Prepaid Health Programs (ANCHOR), Management Information Sciences and Services, and Ambulatory Care.

A third Senior Vice President position, being held by Dr. Campbell in an acting capacity, embraces responsibilities for Nursing Affairs, the College of Nursing, Scientific Affairs, the College of Health Sciences, and Academic Support Services for Rush University.

Leo M. Henikoff, M.D., was named Acting Vice President, Medical Affairs, and Acting Dean of Rush Medical College, reporting to the office of the president through Dr. Hejna. Dr. Henikoff, Associate Professor in the Department of Pediatrics and Associate Attending Physician in Presbyterian-St. Luke's Hospital, is Assistant Vice President, Medical Affairs, and Associate Dean, Medical Sciences and Services, Rush Medical College.

Offer Doctoral Program in Nursing

A doctoral program in nursing science (D.N.Sc.) will be offered at Rush University College of Nursing in September, 1977, with an expected opening enrollment of 10 students. Luther Christman, Ph.D., R.N., Dean of the College of Nursing and Vice President, Nursing Affairs, made the announcement following the January 21 vote by the College of Nursing faculty approving initiation of the program.

Dr. Christman said: "The new doctoral-level program, one of few in the nation, is a response to the changing needs of the nursing profession. As systems for health care become more sophisticated and demanding, the educational preparation becomes more exacting. For health care professionals in general, it means the highest scientific and clinical preparation possible; for nurses in particular, it means preparation enhanced by doctoral-level education."

Dr. Christman emphasized that nursing professionals with doctoral degrees are seen as prime innovators who will stimulate further growth in the profession and in the science of nursing.

"Nurses with doctoral preparation are greatly needed," he said, "to provide nursing leadership and faculty for collegiate schools of nursing; to conduct research, apply scientific data, and evaluate changes in the health care system to improve care."

According to Dr. Christman, the doctoral program is the logical step for the College, which currently offers programs leading to the Bachelor of Science and Master of Science degrees, both with a major in nursing, and post-master's study in geriatric nursing.

Testosterone Studied, May Be a Cause of Deviant Sexual Behavior

A young man is arrested for raping three women. His friends and family are shocked by his arrest—he is regarded by all who know him as a loving husband and responsible citizen. When questioned by police he states, "I couldn't help myself."

It is possible that this man indeed could not help himself, that he could not control his behavior. According to new research findings, compulsive deviant sexual behavior may be caused by elevated levels of the male sex hormone, testosterone, or by an abnormal chemical response to this hormone. Jan A. Fawcett, M.D., the Stanley G. Harris, Sr., Chairperson of the Department of Psychiatry, has successfully treated several such patients—sex offenders whose behavior is believed to be caused by an abnormal amount of or sensitivity to testosterone. "These people are driven by their own testosterone to do these things," Dr. Fawcett said. "It is normal to believe they should have full control over their actions, but the research indicates they are driven by hormones they can't control. Even in the face of punishment they do it over again."

There is strong evidence to support the contention that testosterone may be involved in compulsive deviate hypersexuality. Recent attempts to control compulsive sexual behavior by lowering levels of testosterone in sex offenders have been successful. The treatment involves use of a synthetic hormone, Depo-Provera. Therapy with this hormone reduces the amount of testosterone in a man's body. And, as the testosterone level is lowered, the patient's deviant sex drives are suppressed, the compulsions disappear, and the patient can usually have normal sexual relations. Depo-Provera, a synthetic form of the female sex hormone progesterone, does not feminize men, and testosterone levels return to normal when the treatment is stopped.

The hormone is injected into the patient, with a single dose lasting from between 10 and 21 days. During therapy, patients undergo adjunctive psychotherapy to help redirect their sexual impulses into normal channels.

Dr. Fawcett has successfully treated several patients with this therapy, and has noted that they often display other symptoms besides the compulsive deviant sexual behavior. They usually are physically restless, irritable, and impatient. He said, "There is a dramatic change after treatment begins. They seem calmer. They are suddenly free of their compulsions. They are relieved. Most said they didn't want to commit the offenses but they couldn't help it."

It is not yet known whether this hormone therapy can produce a permanent cure. But one of Dr. Fawcett's patients who began therapy more than three years ago has maintained a normal sex drive and is free of deviate compulsions. Dr. Fawcett hopes to perform a formal clinical study to measure the effects of this therapy in a larger group of patients.

Brain Implants in Cerebral Palsy Patients Studied

The surgical implant of brain pacemakers, a dramatic procedure that helps some persons with cerebral palsy, will be studied by Richard D. Penn, M.D., under a two-year, $73,580 research grant from the United Cerebral Palsy Research and Educational Foundation.

Dr. Penn, Associate Professor and Attending Physician in the Department of Neurosurgery at the Medical Center, will develop guidelines for patient selection in the new procedure.

The procedure involves the surgical implant of electrodes inside the skull to stimulate the brain and change muscle function. It has been performed on several hundred patients by neurosurgeons in New York, Miami, Chicago, Kansas City, and on the West Coast.

Some patients have reported varying degrees of relief from speech impediments, muscle spasms, and involuntary movements caused by brain damage, but the procedure seems to be of limited value in other patients. Why the benefits differ is an important aspect of the study.

Another objective is to determine how long and how often brain stimulation should be applied after the electrode implants have been made. For some patients, muscle rigidity may be reduced for minutes or hours after stimulation before it recurs. And for some, the longer the stimulation, the longer the after-effect. Dr. Penn will investigate the possibility that, as a consequence, the nervous system becomes transformed and relatively permanent changes occur.

The award follows a $25,000 grant last month by the United Cerebral Palsy Foundation to Irving S. Cooper, M.D., New York neurosurgeon who pioneered the brain pacemaker implant procedure four years ago at St. Barnabas Hospital in the Bronx. That grant was to gather follow-up data for a year or two on at least 100 persons who have undergone the procedure.

The studies on brain pacemakers are part of more than $800,000 in research grants approved or projected for funding by the United Cerebral Palsy Foundation's Board of Directors for the coming year.

Rush and Christ Hospital Expand Cooperation

A new agreement to enhance education programs and patient care services and to control costs through joint utilization of resources has been signed by the Evangelical Hospital Association (EHA) and Rush-Presbyterian-St. Luke's Medical Center.

The agreement of association involves the Medical Center and Christ Hospital, Oak Lawn, Ill., which is owned and operated by EHA. Christ Hospital has been affiliated with the Medical Center since 1971. The agreement strengthens commitments to interinstitutional planning and program development, including graduate, undergraduate, and continuing education, nursing education, patient care, research, and shared institutional support services.

Both institutions signed the agreement "to fulfill common goals of bringing the highest level of quality in medical care to their broad communities, providing high-quality education in the health fields, enhancing research activities, and achieving efficiency and economy in these and related activities."

Under the agreement, each institution continues to be an autonomous corporation, governed independently by its respective governing body. A Joint Policy Committee and a Joint Management Committee were established to coordinate the joint programs.

Appropriate faculty appointments to Rush University for members of Christ Hospital medical and professional staffs are being made under the rules of governance of the university.

Christ Hospital, an 815-bed teaching facility, has served the people of southwestern metropolitan Chicago since 1961. The fourth largest voluntary hospital in metropolitan Chicago, it has 110 medical residents and provides educational programs for nursing students. It also offers programs in ancillary health care services, including medical technology, pharmacy, medical records, and physical therapy.

Scientists To Proceed from Animals to Humans in Study of Stroke Drug

The Food and Drug Administration has authorized scientists at Rush-Presbyterian-St. Luke's to proceed from animal to human investigation in their study of a new drug that appears to reduce the symptoms and residual illness of stroke.

The Medical Center is the only institution to have received permission to use the drug, called pentoxifylline. The approval came after extensive animal studies in the Department of Neurological Sciences demonstrated highly beneficial effects. The drug will be given to a small, selected group of patients who are admitted to the Medical Center with symptoms of stroke.

The clinical studies will be supervised by Maynard M. Cohen, Ph.D., M.D., Jean Schweppe Armour Professor and Chairman of the Department of Neurological Sciences. Co-investigators are Elizabeth Kessler, M.D., and John Cochran, M.D., instructors at Rush Medical College. The animal studies were conducted by J. Francis Hartmann, Ph.D., Professor of Neurological Sciences and Director of Neurobiology; Ruth A. Becker, B.S., research assistant; and Dr. Cohen.

Pentoxifylline, manufactured in Germany, has been used successfully in Germany and Hungary to treat patients with brain swelling caused by vascular problems. However, both the animal and clinical studies at the Medical Center mark the first time the effects of the drug on stroke have been investigated systematically.

Dr. Hartmann's group tested the drug on Mongolian gerbils, animals in which stroke symptoms are similar to human stroke symptoms. Dr. Hartmann noted that pentoxifylline increases the metabolism of the damaged brain (metabolism is interfered with during a stroke) and has been able to reverse the damaging effects of the stroke, decreasing both mortality and residual illness.

"The drug (also) has shown that it counteracts brain swelling caused by stroke," Dr. Hartmann reported. Some degree of brain swelling occurs in all stroke, and massive swelling can be fatal. Swelling can cause the patient to lose consciousness and intensifies stroke symptoms, such as paralysis and slurring of speech. Other agents that reduce swelling generally have not been successful in reducing swelling caused by a stroke.

"Swelling is the result of damage. This drug may be successful because it may be treating the tissue changes that cause swelling. We don't know yet," Dr. Cohen said.

Alumni Bulletin

Alumni Association Elections Scheduled

R. Gordon Brown, M.D. ('39), has been nominated to serve as president of the Alumni Association of Rush Medical College under the first specified terms of the new association constitution, adopted in 1976. A Trustee of Rush-Presbyterian-St. Luke's Medical Center and the current president of the association, Dr. Brown also is a Senior Attending Physician in Internal Medicine at Presbyterian-St. Luke's, Associate Professor of Medicine at Rush Medical College, and Vice Chairman of the Alumni Leadership Subcommittee of the Trustee Committee on Philanthropy.

The nominee for vice president of the Alumni Association is R. Joseph Olk, M.D., a 1975 graduate of Rush and currently a resident in Ophthalmology at Presbyterian-St. Luke's and an assistant in Ophthalmology at Rush Medical College. Elected a Trustee of the Medical Center in 1975, Dr. Olk is also a member of the Alumni Leadership Subcommittee.

Alumni nominated to continue as members of the Alumni Association Executive Council include: C. Arnold Curry, M.D. ('73), a resident at Henry Ford Hospital in Detroit; Frederic A. dePeyster, M.D. ('40), Senior Attending Physician in Surgery at Rush; John M. Dorsey, M.D. ('31), Retired Chairman of the Department of Surgery at Evanston Hospital; Stanton A. Friedberg, M.D. ('34), Senior Attending Physician at Rush in Otolaryngology and Bronchoesophagology; Solomon B. Goldman, M.D. ('37), Attending Physician in Urology at Mt. Sinai Hospital in Miami Beach and member of the faculty of the University of Miami Medical School; Gregory Graves, M.D. ('74), a surgical resident at Rush; R. Lincoln Kesler, M.D. ('35), Senior Attending Physician in Internal Medicine at Rush and Chairman of the Benjamin Rush Society; Ronald Nelson, M.D. ('74), a resident in Internal Medicine at Rush; George A. Nicola, M.D. ('37), a surgeon and Attending Physician at Queen of Angels Hospital and Good Samaritan Hospital in Los Angeles; Floyd F. Shewmake, M.D. ('73), a resident in Internal Medicine at Rush; Simon Shubitz, M.D. ('36), a cardiologist from North Hollywood, Calif., and member of the American Academy of Family Physicians; and Willard Wood, M.D. ('30), Senior Attending Physician in Internal Medicine at Rush.

Six nominees for new membership in the Executive Council are Eloise Parsons Baker, M.D. ('25), of Neponset, Ill.; Terrold Butler, M.D. ('76), a pediatric resident at Rush; George Callahan, M.D. ('26), a surgeon from Waukegan, Ill.; Ruth Campanella, M.D. ('74), a Rush resident in Otolaryngology and Bronchoesophagology; Edward S. Judd, M.D. ('37), Professor Emeritus at the Mayo Clinic in Rochester, Minn.; and Steven Sicher, M.D. ('75), a resident in Internal Medicine at Lenox Hill Hospital in New York City.

In March the Nominating Committee, under Chairman Frederic A. dePeyster, M.D., canvassed the alumni for additional nominations and suggestions, and ballots are now in the mail for the election of officers to the association. The new officers will be announced at the Annual Meeting in Chicago on Friday, June 10.

Dr. dePeyster has expressed his appreciation to all those willing to serve and his confidence that they "will be a great help in furthering the efforts of the association in supporting Rush."

1977 Regional Meetings Series Begins in Los Angeles

The first of a series of Rush Medical College alumni regional meetings was held in Los Angeles on Saturday, January 22. The meeting was arranged by Drs. George Nicola ('37) and Simon Shubitz ('36). Dr. Nicola served as emcee and James A. Campbell, M.D., President of the Medical Center, presented a history of Rush's recent growth.

The dinner meeting was attended by 70 Rush Medical College alumni, former house staff of Presbyterian-St. Luke's Hospital, friends of Rush, and spouses. Also attending was John S. Graettinger, M.D., Dean of Faculty Affairs and Director of Graduate and Continuing Medical Education at the Medical Center. The meeting marks one of the first times a concerted effort was made to involve "house staff alumni" in regional alumni activities, and results were encouraging.

Dr. Campbell's remarks centered on the dramatic changes at Rush and Presbyterian-St. Luke's in the past 30 years, culminating in the creation of Rush University and the dedication of the Academic Facility. Using a slide presentation, Dr. Campbell compared the facilities existing in the

James A. Campbell, M.D.

1930s and 1940s with the present Medical Center and the Rush Care Network of more than 4,000 beds at Presbyterian-St. Luke's and network' hospitals. Many of the alumni commented that this visual "guided tour" brought home to them the reality and the progress of the "new Rush."

The main interests and questions of the alumni at the meeting were about today's Rush students. Fred Nicola, a Rush student of the class of 1977 and son of Dr. George Nicola, was very well received as he related today's Rush curriculum to those attending. The alumni also were impressed by the need for endowment for student assistance, and especially by the approximate $15,000 yearly cost per student to the institution.

Succeeding regional meetings for Rush alumni and former hospital staff are planned for San Diego and Phoenix in mid-April, San Francisco in late April, and Miami, New York City, the Washington D.C. area, and the Minneapolis-St. Paul area in May.

Simon M. Shubitz, M.D. ('36)

George A. Nicola, M.D. ('37)

Frederic Nicola ('77)

Rush Alumni Commencement Activities Set

The Alumni Association of Rush Medical College annual meeting and announcement of this year's officers is scheduled for noon, Friday, June 10, 1977. In the afternoon there will be a series of seminars for alumni, similar to those held at the time of the dedication of the Academic Facility. Friday evening will be the occasion for the annual Pre-commencement Banquet, honoring Rush Medical College's graduating class of 1977 and the 50-year anniversary class of 1927.

Rush University's 1977 Commencement is scheduled for Saturday afternoon, June 11. Rush Medical College will be graduating 87 students, 155 are to receive degrees from the College of Nursing, and 20 will receive degrees from the College of Health Sciences. This year's Commencement speaker will be David A. Hamburg, M.D., professor of psychiatry at Stanford University School of Medicine. He was a psychiatric resident at Michael Reese Hospital in Chicago and chief of the adult psychiatric branch of the National Institute of Mental Health. He is a member of the National Academy of Science, the American Psychiatric Association, the American Society of Human Genetics, and the American Anthropological Association.

As always, Rush alumni are cordially invited to attend all Pre-commencement and Commencement activities.

The Benjamin Rush Society

The Benjamin Rush Society is an honorary society of the alumni and friends of Rush Medical College who support the work of Rush with contributions of $1,000 or more a year. It is a major and vital source of alumni support for the Rush tradition of excellence and compassion in medicine. Benjamin Rush Society members give to Rush through regular contributions and a variety of deferred giving programs. The present honor roll consists of approximately 80 members. For information on how you may contribute to Rush's future, please get in touch with:

R. Lincoln Kesler, M.D., Chairman
The Benjamin Rush Society
Rush-Presbyterian-St. Luke's
Medical Center
1725 West Harrison Street
Chicago, Illinois 60612

In Memoriam

William D. Sicher, M.D.

William D. Sicher, M.D., 62, a 1940 graduate of Rush Medical College and a Trustee of Rush-Presbyterian-St. Luke's Medical Center from 1972-75, died in New York City on Friday, Jan. 7, 1977.

Dr. Sicher was an Attending Physician and Coordinator of Medical Education and Medical Administration at Lenox Hill Hospital, New York City.

After graduating from Rush Medical College, he completed an internship at Presbyterian-St. Luke's Hospital. He did additional postgraduate training at the Mayo Clinic in Minnesota and at Lenox Hill Hospital. He received his B.A. degree from Dartmouth College in 1936.

Dr. Sicher was a former member of the Executive Board of the Alumni Association of Rush Medical College and among those who guided the merger of Rush Medical College with Presbyterian-St. Luke's Hospital, forming Rush-

Presbyterian-St. Luke's Medical Center in 1969. He also was Vice-President of Ramapo-Anchorage Camp, Inc., a nonprofit summer camp for emotionally disturbed children.

A member of the Benjamin Rush Society of Rush Medical College and the Mayo Clinic Alumni Association, Dr. Sicher also was a Fellow in the American College of Physicians, the American and New York Rheumatism Associations, the Association of American Medical Colleges, and the Association for Hospital Medical Education.

He is survived by his wife, Ann Berhard Sicher, and two children, Steven E. and David D. of New York City. Steven is also an alumnus of Rush Medical College, graduating in 1975.

Thomas C. Galloway, M.D.

Thomas C. Galloway, M.D., 90, a 1912 graduate of Rush Medical College and recipient of its Distinguished Alumnus Award, died on Feb. 24, 1977, at the Presbyterian Home in Evanston, Ill., after a short illness.

Dr. Galloway's research in medicine, especially his "Evanston Cure," a method he devised in 1943 with Dr. Martin Seifert at the Evanston Hospital for the treatment of bulbar polio, brought him international recognition. He was cited at the 1955 meeting of the American Medical Association as "the first to demonstrate conclusively the value of tracheotomy in the treatment of bulbar poliomyelitis." The same year he received the Newcomb Award, the highest honor of the American Laryngological Association, to which he was elected a Fellow in 1968.

Dr. Galloway received his undergraduate degree from the University of Idaho in 1907, and after graduating from Rush, took his residency in eye, ear, nose, and throat at Cook County Hospital in Chicago. In addition to private practice, he was Chief of the E.N.T. Department of Evanston Hospital, Attending Physician at Children's Memorial Hospital in Chicago, and Professor of Otolaryngology at Northwestern University Medical School.

Dr. Galloway was a member of the Phi Beta Kappa Society and of numerous medical societies, including the American Laryngological, Rhinological, and Otological Society.

He is survived by his wife, Grace, of Evanston, and a daughter, Mera Galloway Ferrin, of Kentfield, Calif.

Morris Fishbein, M.D.

Morris Fishbein, M.D., 87, a graduate of Rush Medical College in 1912 and editor of *The Journal of the American Medical Association* for 25 years, died in Chicago on Sept. 27, 1976.

Nationally known by laymen and physicians alike, Dr. Fishbein was the author of 26 books, including "Heart Care" (1960), "Modern Family Health Guide" (1967), and "Modern Home Medical Advisor" (1969). He served as editor of at least 27 other publications, including the *Bulletin of the Society of Medical History* and *Postgraduate Medicine*. A member of the American Medical Association since 1913, Dr. Fishbein made as many as 120 speeches a year for the association during the 1930s and 1940s on a variety of health care issues.

Dr. Fishbein received his B.S. from the University of Chicago in 1910, and served as a Fellow in Pathology at Rush after his graduation in 1912. He received the Certificate of Merit from President Harry Truman in 1948, an LL.D. from Florida Southern College in 1957, and a D.Sci. from the University of Chicago Medical School in 1965.

Dr. Fishbein was a member of numerous associations, including the American Public Health Association, the American Association for the Advancement of Science, and the Chicago Literary Club.

He is survived by three children, Justin, Barbara Fishbein Friedell, and Marjorie Fishbein Clavey. His wife, Anna Mantel Fishbein, is deceased.

C. Earl Baumle, M.D.

C. Earl Baumle, M.D., 73, died in Monroe, Wis., on Sept. 22, 1976. Dr. Baumle was a 1929 graduate of Rush Medical College and resident at Presbyterian-St. Luke's after receiving his degree. He was cofounder of the Monroe Medical Center and associated with the Sisters of St. Clare in the operation of St. Clare Hospital. He is survived by his wife, Henrietta Field Baumle, a son, Jerry, and two daughters, Ione Baumle Dallman and Patricia Baumle Ruf.

Mandel Sherman, M.D.

Mandel Sherman, M.D., 80, a 1921 Rush Medical College graduate, died in Chicago on Feb. 6, 1977. Dr. Sherman was a former Director of the Oarthogenic School of the University of Chicago and an Associate Professor of Educational Psychology there from 1931 to 1950. He was a Psychiatrist at the Institute for Juvenile Research in Chicago and a member of the faculty of the Northwestern University Medical School. He served as Director of the Child Research Center in Washington, D.C., and as Director of the Reiss-Davis Child Guidance Center in Los Angeles. Dr. Sherman is survived by a daughter, Marion Louise Goldman, and a brother, Allen.

Heyworth N. Sanford, M.D.

Heyworth N. Sanford, M.D., a 1925 graduate of Rush Medical College, died in New Haven, Conn., on Feb. 10, 1977. Dr. Sanford completed his residency at Presbyterian-St. Luke's Hospital and was an Attending Physician in Pediatrics there until his retirement. Dr. Sanford was a member of the Benjamin Rush Society, and through a bequest has provided for the Heyworth N. and Catherine Sanford Scholarship Fund for Rush Medical College students.

A Gift in Trust

Many donors are familiar with the advantages of transferring appreciated property in an outright gift to charity. The amount deductible as a charitable contribution is the full fair market value of the assets, there is no capital gains tax on the appreciation, and the charity receives a significant gift at a relatively low cost to the donor.

Similar rules apply to irrevocable gifts-in-trust. Although the charitable deduction is somewhat smaller, the primary advantage is the opportunity to convert highly appreciated, low yield investments into income-producing assets with no capital gains tax implications. These programs also provide a means to ensure financial security for loved ones by adding additional beneficiaries to the trust.

There are three available options for gifts-in-trust at Rush-Presbyterian-St. Luke's Medical Center:

1. Charitable Remainder Unitrust
2. Charitable Remainder Annuity Trust
3. Pooled Income Fund

Charitable Remainder Unitrust
In creating a charitable remainder unitrust, a donor irrevocably transfers property to a trust to be held for his or her lifetime and, if desired, the lifetime of a second beneficiary. The trust will pay the donor and second beneficiary jointly for life, then to the survivor, a fixed percentage of the trust assets as determined by an annual valuation. The donor is entitled to an income tax charitable deduction for a portion of the assets transferred (remainder interest).

Often, the outright sale of appreciated property is impractical because of the capital gains tax obligations such a sale creates. By transferring greatly appreciated property to a unitrust, the donor can avoid all capital gains tax on the appreciation while establishing trust principal based on the full fair market value. Once the property is in the trust, the trustee can convert the assets to income-producing investments for the benefit of the donor.

The income paid to the donor is taxable according to its source, *i.e.*, ordinary income, capital gain, or tax-free return of principal. The trustee can arrange the trust portfolio, within the limits of his fiduciary responsibility, to maximize the tax alternatives for the donor and beneficiary. For instance, the portfolio could be composed of gain-oriented securities to minimize ordinary income. Payments to the donor would be made from proceeds of the sale of appreciated assets. The donor then would report these payments at favorable capital gains tax rates.

Upon the death of the last survivor of the trust, the assets are transferred to charity to be used in a manner specified by the donor.

Example: Unitrust
Both Mr. and Mrs. ______ had been patients in Presbyterian-St. Luke's Hospital and had developed an interest in Oncology research. Over the years, they had invested wisely and their securities holdings had appreciated to the point that sale of the securities would have subjected them to considerable capital gains tax liability.

A Unitrust provided them with the optimal method of converting their securities and for supporting cancer research at the Medical Center. They transferred securities with a cost basis of $50,000 and a present fair market value of $100,000 to a unitrust, which pays them 5 per cent of the trust assets annually in joint payments, then to the survivor. In the first year of the trust, they received $5,000. On the first anniversary of the trust's inception, the assets were valued at $102,000, and they received $5,100 in the second year.

Based on actuarial computations using Treasury data, Mr. and Mrs. __, who were 75 and 70 years of age, respectively, on the date of transfer, generated a charitable contribution deduction of $51,913, reportable in the year of transfer up to 30 per cent of their gross taxable income. Any excess could be carried over for as many as five years.

Upon the death of the last surviving beneficiary, the assets of the trust will be used to support cancer research at Rush-Presbyterian-St. Luke's Medical Center.

Charitable Remainder Annuity Trust
With the major exception of the manner in which income to the trust beneficiaries is determined and the resultant variation of the charitable contribution deduction, a charitable remainder annuity trust is no different from a unitrust.

Whereas the income from a unitrust is a percentage of the trust assets valued annually, the income from a unitrust is a fixed dollar amount, determined at the outset, which will never vary. Appreciated property may be transferred with no capital gains tax liability. Income to the donor is taxed according to its source, and additional beneficiaries may participate in the trust.

Example: Annuity Trust
If the donors in the previous example had chosen to fund a charitable remainder annuity trust with principal of $100,000, stipulating a static annual income of $5,000, they would have been entitled to an income tax charitable contribution deduction of $54,480. Regardless of the performance of the trust, the $5,000 annual income to the beneficiaries would never vary. Upon the death of the last survivor of the agreement, the trust assets would become the property of Rush-Presbyterian-St. Luke's Medical Center.

Pooled Income Fund
A pooled income fund is the charitable counterpart of a common trust fund. When a donor transfers assets to a pooled income fund, his gift is commingled with similar gifts and all beneficiaries share in the trust income proportionally. Since each donor's contribution to the fund is not required to be separately invested, but pooled with similar gifts, smaller contributions to the fund are feasible and welcome.

Upon entering the fund, donors are assigned units of ownership in the fund. The value of each unit of ownership is $1; therefore, if a donor contributes $5,000 to the fund, he/she is assigned 5,000 units. By dividing each donor's units by the total number of units outstanding, the percentage of ownership is determined and income from the fund is distributed accordingly.

Appreciated property may be transferred to a pooled income fund, thereby avoiding the capital gains tax liability that would accrue if the assets were to be sold. The donor is entitled to a charitable contribution deduction for a portion of the assets and additional beneficiaries may be included. The income from a pooled income fund is taxed as ordinary income.

Example: Pooled Income Fund
If Mr. and Mrs. ______ had chosen to transfer $100,000 to our pooled income fund, they would have been entitled to an income tax charitable deduction of $46,562, reportable in the year of transfer. Their annual income would be determined by dividing the fund's total income by their share of ownership in the fund; therefore, their income would vary from year to year depending upon the fund's performance.

The Office of Estate Planning at Rush-Presbyterian-St. Luke's Medical Center can provide you with data pertinent to your own situation. We are eager to work with you and your counsel to establish a program to suit your financial and philanthropic wishes.

Office of Estate Planning
Rush-Presbyterian-St. Luke's
Medical Center
1725 West Harrison Street – Room 920
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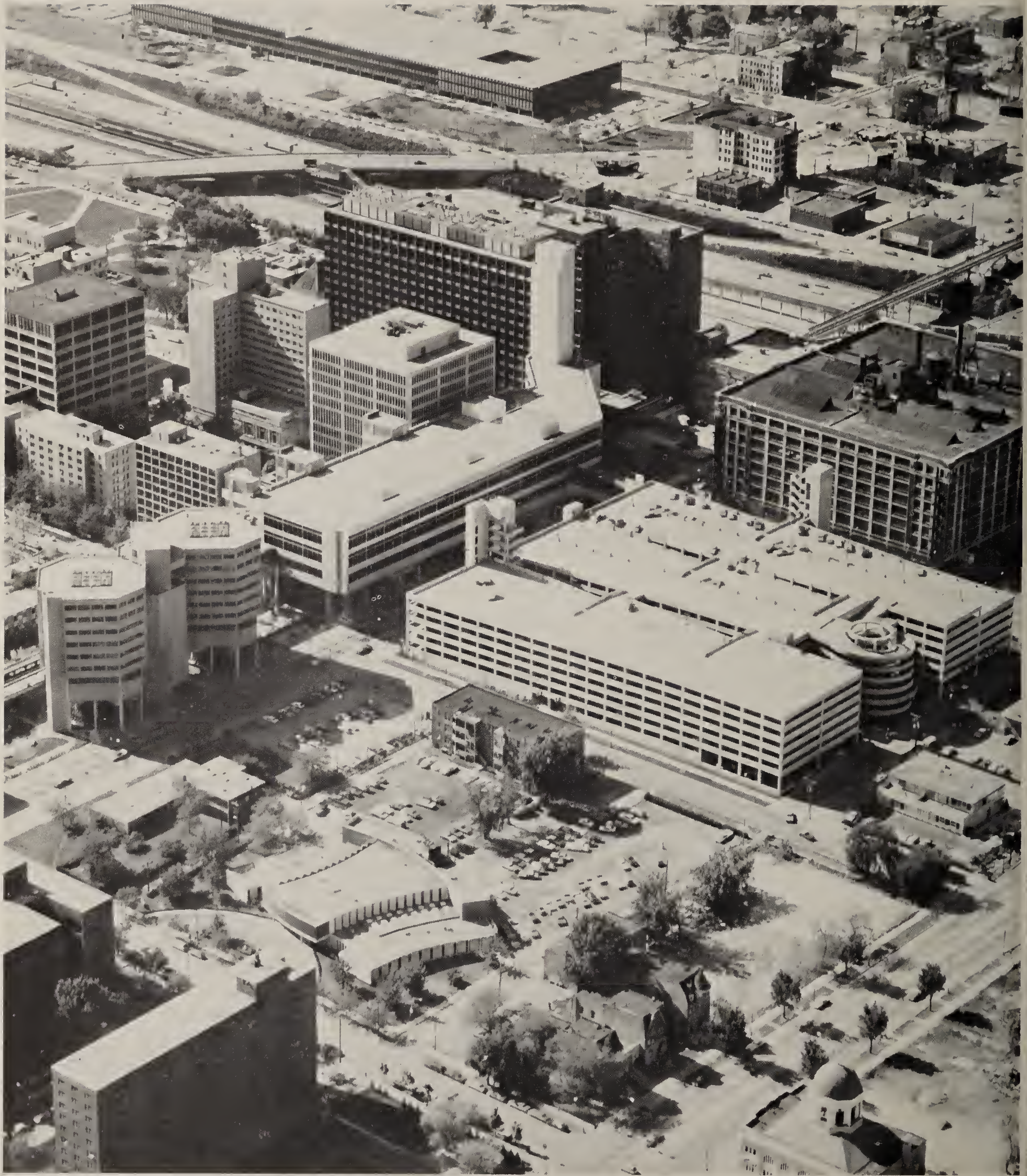


The Johnston R. Bowman Health Center for the Elderly (center left) is physically linked to the Academic Facility of Rush University, the Professional Building, Presbyterian-St. Luke's Hospital, and the parking garage used by staff and visitors.

Caring for the Elderly by Caring About Them

by Mary Kelly

When 66-year-old Andrew Dutko entered the Johnston R. Bowman Health Center for the Elderly in November 1976, he was on a stretcher—catheterized, and unable to walk, talk or eat because of a stroke that had paralyzed the right side of his body.

He had suffered the stroke three weeks earlier and had been rushed to a community hospital on Chicago's west side.

"The doctors there told me that my husband probably could learn to walk and talk again with the proper therapy," Mrs. Dutko said. "But the hospital wasn't equipped for that kind of therapy." A hospital social worker arranged for Mr. Dutko's transfer to the Bowman facility on November 23.

For the next 68 days, Mr. Dutko participated in a rehabilitation program at Bowman including physical, occupational and speech therapy. After returning home, he continued his therapy with the help of a community health care nurse and a physical therapist from Bowman who visited him several times a week for three months.

Now, almost a year later, Mr. Dutko is getting around on his own with the help of a cane. He cooks for himself, eats by himself, and is able to go up and down stairs and take walks. He still has some difficulty with his speech, but he does manage to communicate. And, most significantly, he's home where he wants to be.

Americans 65 years of age and older, like Andrew Dutko, have the highest incidence of chronic disease of any age group. Strokes, congestive heart failure, diabetes, and other common chronic diseases among the elderly often do not yield as dramatically to therapy as do the health problems of younger people. This tends to discourage health professionals from making career decisions that would focus on treatment of the elderly.

"And yet," says Fredric Neikrug, administrator of the Bowman Center, "there is probably no area in the health field with more frontiers just waiting to be crossed. The aged constitute about 11 percent of the total population but 25 percent of all health costs are for the care of older people who are more vulnerable to chronic disease. We don't know exactly how much of that figure represents maintenance of elderly persons who could be functioning on their own with restorative and rehabilitative care, but we know it's considerable.

Judy Sladek, R.N., chats with a patient.

"By the year 2000, it is estimated that 16.5 percent, or one out of every six Americans, will be 65 or older. It is imperative that health professionals develop the care delivery systems and trained personnel to serve this population. Providing quality care that enables the elderly to function fully and enjoy satisfying lives — that's what the Bowman Center is all about," Neikrug says.

The Bowman Center was created by Johnston R. Bowman's widow, Lula. Her will provided for a not-for-profit corporation (the Johnston R. Bowman Home Corporation) to carry out her plans for a home serving the elderly and a trust to provide income for it.

"In keeping faith with Mrs. Bowman, we felt it was important that the building and its services not be a redundant monument to a bygone age, but an institution that had answers for the future," said David W. Dangler, President of the Home Corporation. "We wanted a positive approach to what has traditionally been thought of as a negative time of life: to bring light to a fading sunset. The elderly should be kept in touch with the world and lead full, real lives."

Dangler said that eight institutions in the Chicago area were invited to submit proposals outlining how they would respond to criteria for meeting the needs of the aged established by the Bowman Home Corporation.

Rush-Presbyterian-St. Luke's had the "most imaginative and satisfactory proposal," said Dangler. "They had the commitment to quality care for the aged, and the expertise to provide it."

Rhoda Pomerantz, M.D., Medical Director, Johnston R. Bowman Health Center for the Elderly.

The Rush proposal, in essence, put at the disposal of elderly patients a service delivery team including physicians in many different specialties, nurses trained in geriatrics and rehabilitation, social workers, occupational and physical therapists, activities therapists, psychologists, psychiatrists and nutritionists. Back-up for the program, which is reimbursable under Medicare and Medicaid is provided by the full resources of the Medical Center, including Presbyterian-St. Luke's Hospital, Rush University's three colleges of medicine, nursing, and health sciences, and the Sheridan Road Pavilion on Chicago's north side. In addition to the patient care programs, provision was also made for elderly persons in good health by reserving two floors as residential apartments.

Built on the Medical Center campus and its operations managed by Rush-Presbyterian-St. Luke's, the Bowman Center is approaching its first anniversary. Rhoda S. Pomerantz, M.D., Medical Director of the Johnston R. Bowman Health Center for the Elderly, and Director of the Section of Geriatrics at the Medical Center, reflected on what the past year has meant in patient care.

"Many have been brought in on stretchers, made mute and lame by a stroke and have been able to walk out at discharge after relearning basic motor and communication skills," said Dr. Pomerantz. "Many who have come to us sick, malnourished, and as social isolates have been discharged to their homes clinically stable and with a wide variety of community social support services and the reassurance of continued access to the Rush System of health care."

By August 1977, the Bowman Center had provided in-patient services for approximately 650 elderly persons. Some come directly from Presbyterian-St. Luke's Hospital, some are referred through the Rush network of ten affiliated hospitals, and still others are referred to Bowman by private physicians, social workers, and discharge planners from hospitals throughout the Chicago metropolitan area.

The Johnston R. Bowman Health Center for the Elderly has begun to realize the promise its planners had for a unique center that could serve as a national model.

The three core programs for in-patient care offered at Bowman at present include:

- Restorative or rehabilitative care
- Skilled nursing care
- Short-term care for the acute phases of chronic diseases, or the care of individuals suddenly incapable of living independently.

Prior to admission to the Bowman facility, patients are carefully screened. "Its a difficult decision," Dr. Pomerantz says, "but our commitments must be made to those who can be upgraded physically, medically, mentally and functionally. There are hundreds of thousands of aged persons written off as 'senile' or incapacitated who can benefit from the type of program we have. We want to demonstrate to others that such people can be restored and that it can be done on a cost-effective basis." For this reason, patients who are unlikely to make sufficient progress to return to their community within 6 months are assisted in making other arrangements for care.

A social or comprehensive evaluation is completed on each patient who is admitted to Bowman. The workup covers physical and laboratory assessment, cognitive evaluation, hearing tests, self-image assessment, and evaluation of factors affecting physical and mental well-being. Members of the health care team then meet to discuss the patient's problems and, working with the attending physician, determine the patient's prognosis for recovery. Each patient's progress is also reviewed by the health care team weekly thereafter.

"By deriving information from all those working with the patient, we are all better able to help," says a member of the team, Virginia I. Wolfe, Ph.D., Director of the Section of Communicative Disorders in the Medical Center's Department of Otolaryngology and Bronchoesophagology. "There is a close cooperative relationship between physicians, physical and occupational therapists, speech and hearing therapists, geriatric

Continued on page 6

The Johnston R. Bowman Apartments

A Way of Life

Each weekday morning Mrs. Ida Lloyd leaves her private apartment, takes an elevator down several floors, and begins a full workday — visiting hospital patients, replenishing water pitchers, distributing mail, and pinch-hitting at an information desk. In the late afternoon, she again takes an elevator up to her ninth-floor one-bedroom apartment for a quiet evening at home either reading, watching television or the Chicago skyline, or to prepare to go out to a movie with some friends.

Mrs. Lloyd is retired, a resident of the Johnston R. Bowman Apartments, the two top floors of the Bowman Health Center for the Elderly, and a volunteer hospital worker.

"The volunteer work is good for me," Mrs. Lloyd says. "You can't just stop and sit you know. And I enjoy it; it's a good way to get to know the building."

Herself a former building manager, Mrs. Lloyd has nothing but praise for the Bowman apartments. "The advantages of living here are tremendous," she says, pointing around at a huge window spanning the width of her living room, plants along the window sill, several big easy chairs, a couch, a breakfront, and a table complete with photos of her grandchildren. The kitchen, which is off the living room, has modern appliances and natural wood cabinets, and the bathroom a non-slip bottom on the tub and a strong grab bar along the wall next to it. "You very much appreciate these things when you get older," says Mrs. Lloyd.

Mrs. Ida Lloyd in her apartment at Johnston R. Bowman.

Mrs. Lloyd is particularly pleased with the building layout which has all apartments open onto a two-story rotunda that is roofed with a skylight, has lots of seating, and is filled with plants. The arrangement encourages informal get-togethers and provides a convenient central meeting place. "The building has a neighborhood feeling," she says.

Mrs. Lloyd is the type of person the planners had in mind when it was decided to assign two floors — 32 one- and two-bedroom apartments — of the Bowman Center to elderly persons in good health.

"The Bowman apartments," saya Rhoda M. Pomerantz, M.D., Medical Director of the Bowman Center, "are based on the assumption that people who want to maximize independent functioning can be served by developing a total living environment. It should afford cultural, social and educational activities and easy access to the Rush health care system, if that is needed. Services are available to any reasonably healthy aged individual, and include a social program, a preventive medicine program, and a community involvement program."

Bowman residents thus have conveniently available to them a variety of services including outpatient care, recreational programs, and a chapel. They will also participate in the upcoming day care program of the Center, which offers a variety of learning experiences and opportunities to pursue interests in the arts, crafts, and music.

Other Bowman features include the opportunity to volunteer at the Bowman Health Center for the Elderly, as Mrs. Lloyd does, or at nearby Presbyterian-St. Luke's Hospital, and the use of a van that takes all tenants grocery shopping twice a week.

The building also sponsors trips. For example, tenants have recently been offered excursions to the Water Tower shopping center, to the recent King Tut exhibit at the Field Museum, and to a Cubs game. (However, Mrs. Lloyd passed up the Cubs — she's a football fan.)

"Another nice aspect," says Mrs. Lloyd, "is the daily check by the building to make sure everything is all right. This is nice because my family won't be conscience-stricken if they don't call me every day. They're wonderful and call me all the time, but I don't want them to feel they have to. And you really couldn't find anything to equal the security," she says, noting that Bowman offers residents 24-hour safety: security officers patrol throughout the facility and there are cameras at all entrances.

"I guess it's not hard to tell I'm pleased to be in Bowman," says Mrs. Lloyd. "I'm happy here. Having been in the building management business, I know how a building should be run. This one is really fine."

Continued from page 4

nurses, and others," Dr. Wolfe says.

"We don't just listen to each other, we observe each other and work with each other in patient care settings," she said. "I'll often see patients in the physical and occupational therapy areas. By observing problems of the physical therapists in instructing a patient whose speech and/or hearing has been affected by a stroke, I can suggest ways for the therapist to better communicate—such as deleting interstitial words so that the patient can understand what to do. Often the therapists have helpful suggestions for me as well."

Because families are often thrown into turmoil about how to care for an elderly member when he is discharged, family involvement in the therapy program is important. Roger C. Johnson, R.P.T., Director of Physical Therapy, said that "the physical therapists often work with family members, training them in such things as dressings techniques, transfer from wheel chairs to bed or to the toilet, swallowing programs, and exercises."

"Families often think that it's a bigger task than it really is until we show them how to minimize the problem," said Gayle Minkus, O.T.R., Occupational Therapy.

Psychiatric counseling is available for the patient and his family to help them deal with depression, the most common emotional problem of the elderly, and to help the family deal with conflicts about what to do with a family member after discharge from Bowman. Individual psychotherapy is available at the request of the attending physician, said Lawrence W. Lazarus, M.D., Consulting Psychiatrist and Assistant Professor, Rush Medical College. Dr. Lazarus also conducts weekly psychosocio grand rounds for the Bowman staff answering questions

A physical therapist assists a patient.

Occupational therapists assist in the rehabilitation of Bowman patients.

and advising them on how to approach a particular patient's problem. Weekly meetings are also held with the social workers to discuss any problems they might be having with patients and their families.

The Bowman Center also offers an intensive program in social rehabilitation. Richard Lessor, M.S., ACSW, Director of Social Rehabilitation, said the purpose of his department is to "assist the elderly with a wide variety of problems that occur in adjusting to aging." In developing social programs, Lessor said that his department is "dedicated to protecting the individual's choice about structuring his own day and to respecting his cultural and ethnic individuality.

"The life review process is very important to the elderly, so we try to have discussion groups where the residents will tell stories of their lives," Lessor said. "In addition, outside speakers are brought in—a Chicago politician recently spoke about his experiences in early Chicago politics."

More than 40 different activities—some of them now scheduled regularly—have taken place at Bowman since it opened, ranging from poetry workshops to painting, listening to music, discussion groups and quilting bees. Credit courses are offered in cooperation with Wright Junior College in a variety of crafts. One day each month is set aside, Lessor said, to feature a noted speaker in the field of aging.

Besides sponsoring social activities, the Social Rehabilitation Department is involved with community projects, such as in-service training of social workers from other hospitals and a quality of care assessment of Chicago area nursing homes. (However, about 70 percent of patients treated at Bowman are able to return to their homes at discharge, according to Dr. Pomerantz.)

Lawrence Lazarus, M.D., with a patient

In some cases, social workers arrange for discharged patients to receive food stamps, public aid payments, and "meals on wheels."

Not all patients at Bowman receive treatment on an in-patient basis. A day care program for the elderly is scheduled to begin in September, 1977. This program will be an alternative to institutionalizing elderly persons whose families may wish to keep them at home, but who cannot provide care during the day. The patients will receive rehabilitative therapy and participate in activities during the day and return to their families in the evening.

While patient care is the primary concern at the Bowman Center, the education, training, and research programs being conducted there constitute a bright hope for the future of geriatric care.

"With the declining birth rate and increased longevity, older individuals will represent a greater proportion of the population in the future," Dr. Pomerantz said. "In order to provide adequate health care for these

Richard Lessor, Director of Social Rehabilitation, talks with a family member.

Exterior view of the Bowman Center.

individuals, it's important that some training in geriatrics become an integrated part of any medical, nursing, or allied health school curriculum."

Currently Rush University undergraduate and graduate nursing students, medical students, and residents are receiving training at Bowman, in addition to Rush students in clinincal nutrition programs.

"Plans are under way to expand these programs, so that every sector of the educational system at Rush University, both at the undergraduate, graduate and postgraduate levels may use this site for education in geriatrics," Dr. Pomerantz said.

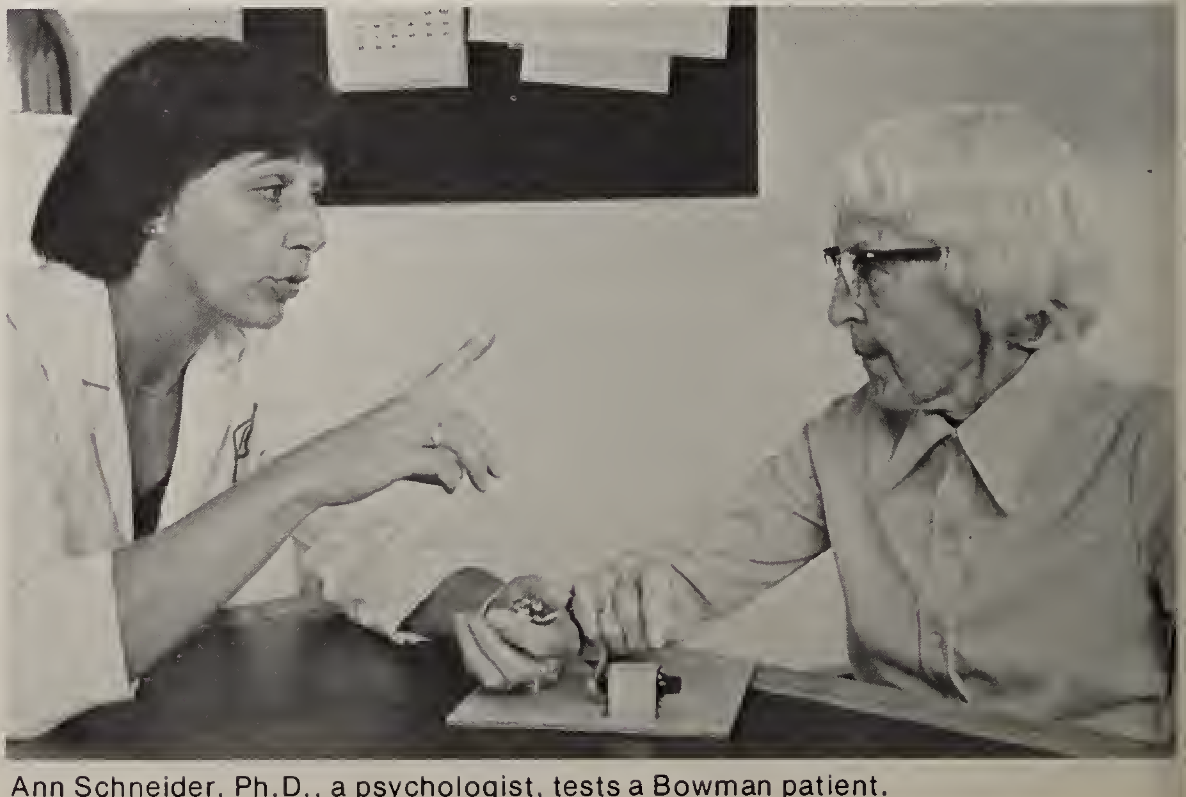
The College of Nursing established a new department of Geriatric/Gerontological Nursing in March 1977, which includes a master's degree program, and a nurse associate program (R.N.'s who receive an extended period of continuing education in physical assessment, history taking, management of chronic disease, all under supervision of a physician).

Efforts are also under way to identify common needs among the various disciplines, so that staff development programs can be set up. Two seminars were planned for September 1977, by Janet Feldman, M.S.N., Director of Research and Education at the Bowman Center, to familiarize health professionals with new concepts in gerontology and to teach them how to integrate these concepts into their teaching programs.

A fellowship in geriatric psychiatry was recently established at Bowman, jointly offered by the Department of Psychiatry at Rush University and by the Illinois State Psychiatric Institute. "It is one of the few centers in the U.S. offering this kind of fellowship," Dr. Lazarus said.

Research efforts also are being expanded. For example, the National Institute on Aging has awarded a $92,000 grant to study the relationship between cerebral atrophy and the psychological functioning of Bowman patients being evaluated for dementia.

Ann Schneider, Ph.D., Assistant Professor in the College of Health Sciences and Rush Medical College is chief investigator for the study which will build on earlier research by Jacob H. Fox, M.D., Jordan L. Topel, M.D., and Michael S. Huckman, M.D. These investigators have



Ann Schneider, Ph.D., a psychologist, tests a Bowman patient.

utilized computed tomography brain scans to confirm senile dementia in elderly patients and have discovered, in a significant number of cases, that persons thought to be senile were actually suffering from other treatable conditions.

Dr. Schneider said that "little is known about the pathogenesis of cerebral atrophy or its association with intellectual functioning in normal and pathological aging. This investigation will study the association between cerebral atrophy, as measured by the computerized axial tomography (CT scan), aging, and intellectual functioning. The study will also examine the relationship between cerebral atrophy and measures of intellectual functioning.

In a recent newspaper interview, Dr. Pomerantz made it clear why such research is vital to the success of any program dealing with the elderly:

"In the elderly, any type of illness from the neck down can look like illness from the neck up," she said. "What appears to be senile dementia may in fact be congestive heart failure, drug intoxication, kidney failure or any number of other problems."

Dr. Pomerantz insists that the first step in caring for the elderly, as with any patient, is an accurate clinical diagnosis. "You can't adequately treat anybody, and you surely cannot provide them rehabilitation services if you don't know what's wrong with them. The next step is to discover the best means of providing treatment. As far as re-

Volunteers with a patient in the Store on Four, the Bowman gift shop.

Library at the Johnston R. Bowman apartments.

The atrium of the Johnston R. Bowman Apartments—a place where residents can get together with their neighbors and enjoy the sunlight.

The chapel.

search in rehabilitation medicine is concerned, there is a wide range of modalities many of which have not been adequately tested in a controlled environment. In addition, the ways in which these modalities may be used for elderly individuals have been tested to an even lesser degree. Bowman offers the site for clinical evaluation of various therapeutic modalities that will make it possible to predict the pragmatic applications of research within a relatively short period of time."

At the dedication of the Bowman Center in May, 1977, James A. Campbell, M.D., summarized the goals of the Bowman Center and its potential as a model for developing similar geriatric programs on a national basis:

"One of the great benefits of the Bowman Center will be demonstrating that the future of the elderly lies not in their isolation but their incorporation into all the possibilities of a full and good life. It is to this purpose—to living, to life—that we dedicate the Johnston R. Bowman Health Center for the Elderly."

Under the supervision of occupational therapists, patients are kept busy and put motor skills to work. Here, several patients are making Christmas decorations.

Mrs. Mathilde Velthuys and guests, James A. Campbell, M.D., and Mayor and Mrs. Bilandic, in her apartment in the Bowman Center.

Bowman patient and visitor.

What Is a College of Health Sciences?

by
David I. Cheifetz, Ph.D.

David I. Cheifetz, Ph.D., Vice President, Scientific Affairs, and Dean, College of Health Sciences.

One will find few colleges of health sciences scattered among the many-titled colleges across the country. Where one does find a similarly titled college, examination shows it to be significantly *unlike* our own College of Health Sciences. Understandably, therefore, there is a high degree of ambiguity—a polite euphemism for ignorance—in our own community about what our College of Health Sciences is. It is not a college of allied health sciences, which is how we sometimes hear it referred to here—(I will try later to explain why that's a reasonable error of designation, but why it is an error to be avoided nevertheless). In short, I welcome the opportunity to describe the College, its origins, its goals, its problems (there are many), where it has come from, and where it proposes to go.

The College is quite new. It was created, by action of the Medical Center Board of Trustees, in November of 1975. It did not choose its dean until early in 1976, and it did not finally develop its own rules of governance for faculty and students until August of 1976. It was created with a seemingly dramatic suddeness, and it would be fair to say, as is true of so many other facets of our Medical Center, that its prime creator was Dr. James Campbell.

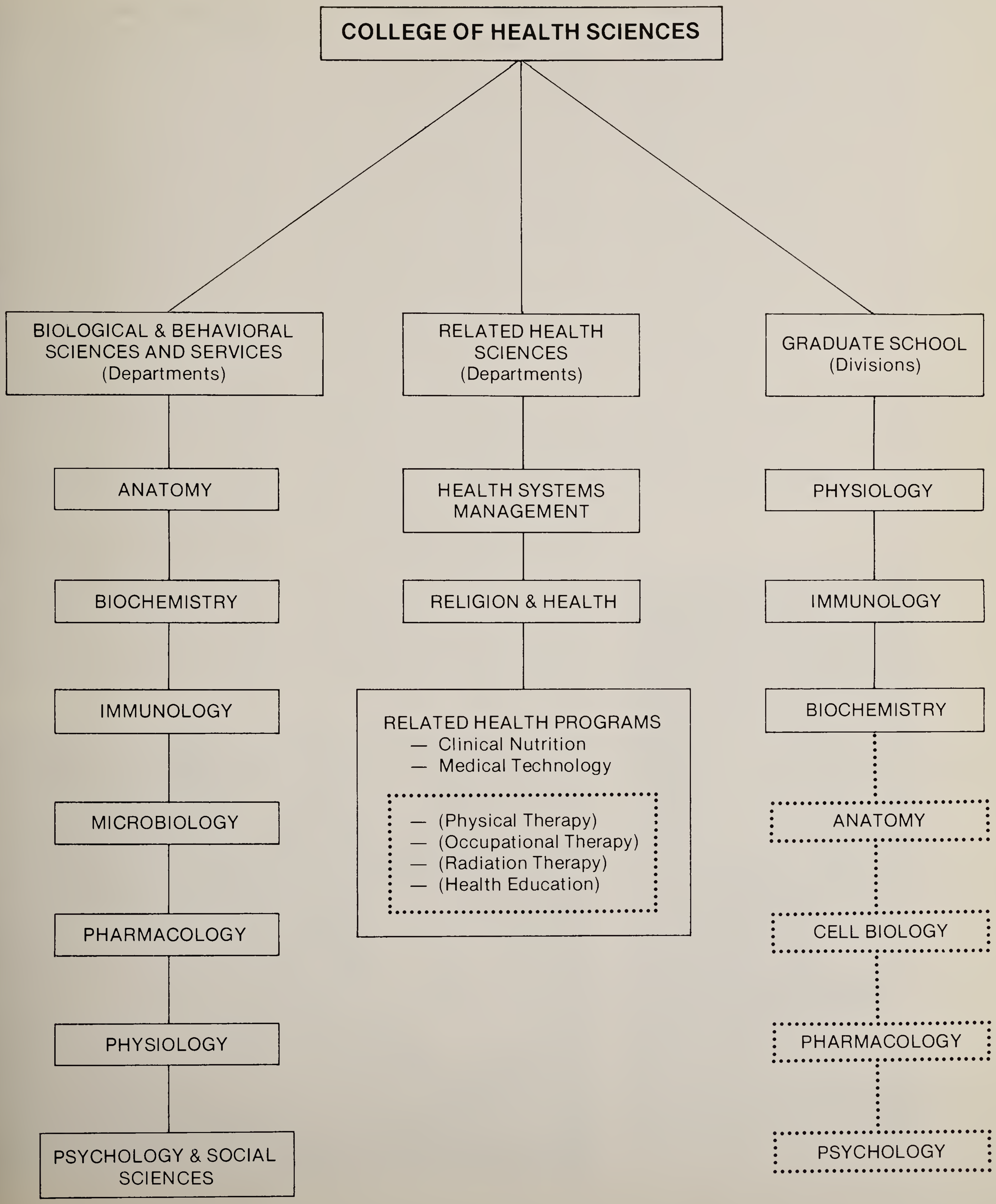
Now, the act of creation takes various forms. Greek mythology, for instance, tells us that Athena sprang full-blown from the brow of Zeus, her radiance, wisdom, and manifest beauty being immediately and undeniably apparent. And so, she immediately became a full-fledged member of the company of gods and goddesses on Olympus. The College of Health Sciences, while it sprang into being with similar precipitousness, did not have the same compelling presence; it did not radiate the same aura; and it did not, therefore, automatically assume its place among the gods (some goddesses) of the Medical College and the goddesses (some gods) of the College of Nursing. In a sense that is just as well. It requires us to document our significance, to explain our nature, to describe our contributions, and to talk frankly about our problems.

All organizational discussions these days begin with an organizational chart (see Chart 1). I think it will save some time if I give you a quick notion of the organization of our college. This is essentially what we are:

There are three vertical arrays: the departments of biological and behavioral sciences and services, the departments of related health sciences, and the divisions of the graduate school. Let me say a word about each of these arrays, and then I would like to consider some of the newest, most problematic, but very promising components.

First, the departments of biological and behavioral sciences and services are not new departments in any sense. They all existed previously as departments within the Medical College. They are now lodged in the College of Health Sciences, and represent, within our Medical Center, the critical mass of basic science which is so important to the scientific *and* clinical progress of a modern medical center. These basic science departments—which include anatomy, biochemistry, immunology, microbiology, pharmacology, physiology, psychology and social sciences—in themselves number more than 150 full-time faculty members and, if our annual budget for research in the entire Medical Center is something over $6 million, these departments produce, through research grants and contracts, 40 to 50 percent of that total. It is these departments which are responsible for the teaching of basic science throughout Rush University. The basic science taught in the College of Nursing is the responsibility of these departments; the first year of the Medical College curriculum, almost in its entirety, is taught by these departments, as is a large portion of the second-year curriculum. In most other medical centers I know of, the basic science departments would be responsible only for research and instruction. This is not true in our Medical Center. As has been stated many many times, the keystone supporting the arch of our Medical Center philosophy is that there *will not be* a separation between education and practice; between research into

Chart I

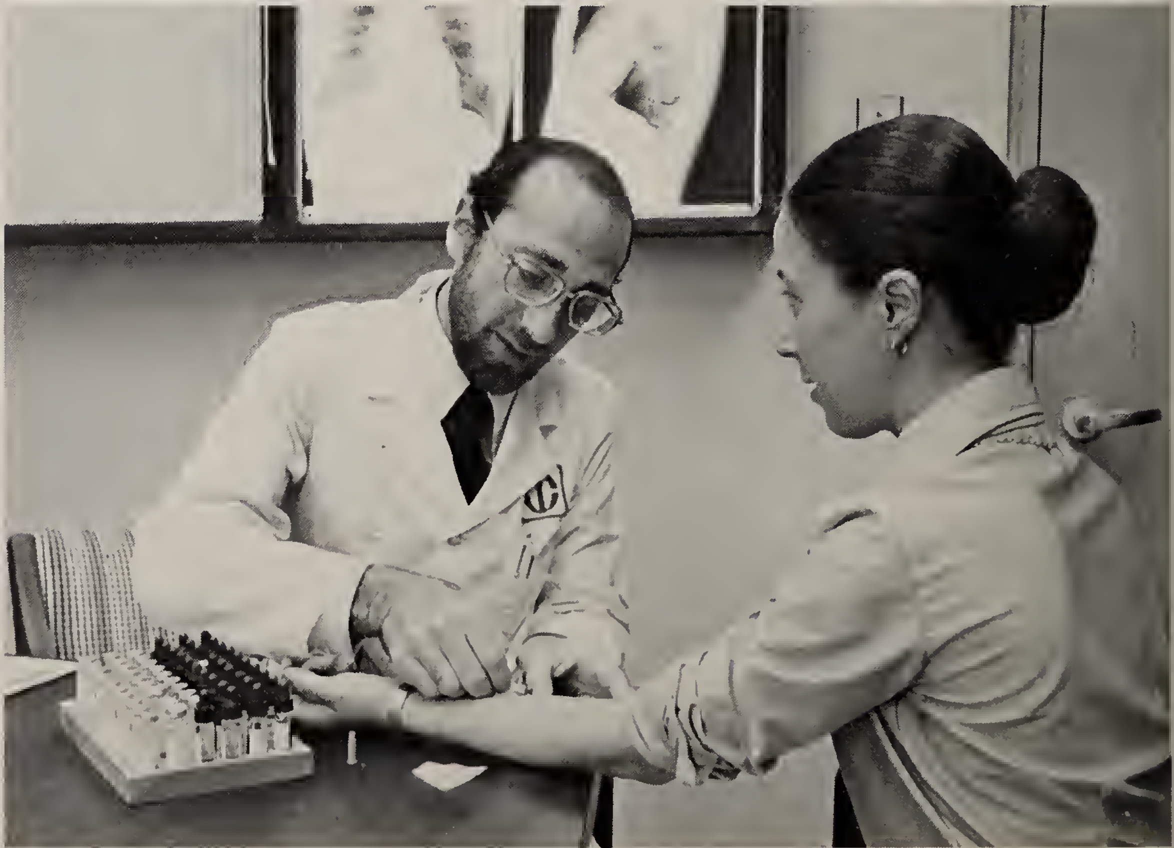

COLLEGE OF HEALTH SCIENCES
BIOLOGICAL & BEHAVIORAL SCIENCES AND SERVICES (Departments)
ANATOMY
BIOCHEMISTRY
IMMUNOLOGY
MICROBIOLOGY
PHARMACOLOGY
PHYSIOLOGY
PSYCHOLOGY & SOCIAL SCIENCES
RELATED HEALTH SCIENCES (Departments)
HEALTH SYSTEMS MANAGEMENT
RELIGION & HEALTH
RELATED HEALTH PROGRAMS
— Clinical Nutrition
— Medical Technology
— (Physical Therapy)
— (Occupational Therapy)
— (Radiation Therapy)
— (Health Education)
GRADUATE SCHOOL (Divisions)
PHYSIOLOGY
IMMUNOLOGY
BIOCHEMISTRY
ANATOMY
CELL BIOLOGY
PHARMACOLOGY
PSYCHOLOGY

patient care and the actual delivery of support of patient care. Because of that philosophical keystone, only two of these departments—anatomy and physiology—by their nature restrict themselves to teaching and research. The other five departments, in a variety of ways, are involved in or contribute to the support of patient care in Presbyterian-St. Luke's Hospital and are therefore also departments on the medical staff of the Hospital. This is an arrangement quite unique to us, and I hope it is understood, so that we will not fall into the error of believing that our basic science departments, like others across the country, do not have a direct relationship to the care of the patient lying in one of our hospital beds. Let me give you a brief example of how that works (see Chart 2).

Brenda Eisenberg, Ph.D., uses the electron microscope to study the ultrastructure of muscle tissue.

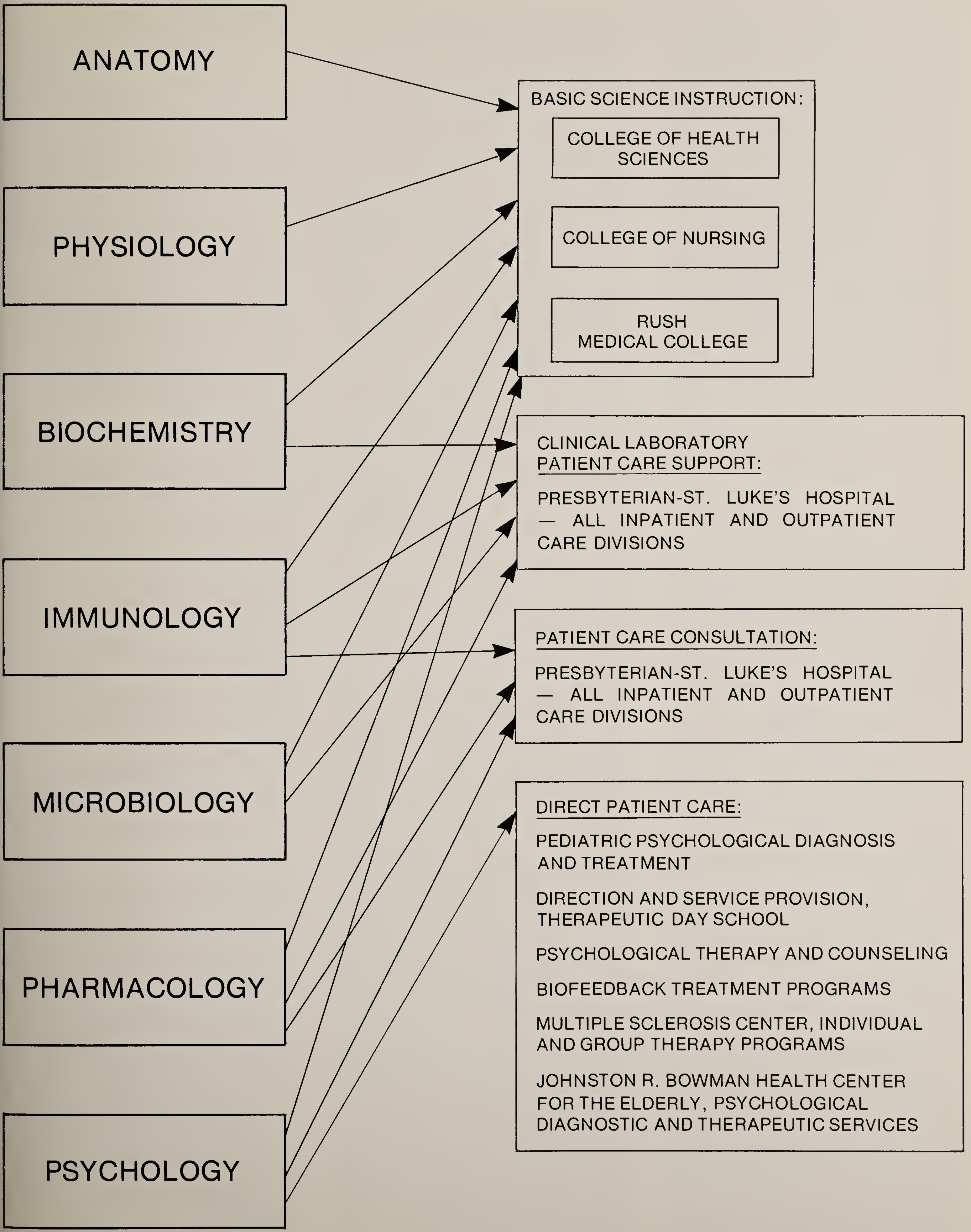
This chart is a qualitative, not a quantitative, graphic picture of the relation of the basic science departments (arranged at the left of the chart) to various functional responsibilities. The dense network of lines simply indicates the intensity of the instructional effort these departments expend in the educational programs of the three colleges (top, right-hand column). The next lower horizontal block refers to clinical laboratory patient care support rendered by some of these departments to all inpatient and outpatient care divisions of Presbyterian-St. Luke's Hospital. You will notice that nodes from four of the basic science departments are extended to patients in this fashion. The departments of biochemistry, immunology, microbiology, and pharmacology account for the bulk of the laboratory services provided to patients.

The next lower block refers to provision of patient care consultation. We are talking here about situations in which an attending physician, during the care of his patient, requests consultation in a particular area of expertise. Three departments are heavily involved in providing such consultation. Immunologists deal with problems of allergic response and its control; they provide guidance in the newly developing management of immuno-suppressive techniques involved, for example, in transplantation problems; they are turning their attention to the natural history of the immune response, which should be telling us more about why it is that normal aging seems to be accompanied by changes in immune response mechanisms. Pharmacologists, through clinical pharmacology consultation, aid in finding proper drug combinations, monitoring drug levels to prevent toxicity, and providing information about indication and contraindication in drug prescription. Clinical psychologists consult throughout the Hospital, assisting in the management of patients by advising of the presence of negative psychological states, the degree of impairment of functions necessary to competence, and the measures that should be taken to enable patients to bene-



Allan T. Luskin, M.D., performs allergy skin test on patient.

Chart II


ANATOMY
PHYSIOLOGY
BIOCHEMISTRY
IMMUNOLOGY
MICROBIOLOGY
PHARMACOLOGY
PSYCHOLOGY
BASIC SCIENCE INSTRUCTION:
COLLEGE OF HEALTH SCIENCES
COLLEGE OF NURSING
RUSH MEDICAL COLLEGE
CLINICAL LABORATORY PATIENT CARE SUPPORT:
PRESBYTERIAN-ST. LUKE'S HOSPITAL — ALL INPATIENT AND OUTPATIENT CARE DIVISIONS
PATIENT CARE CONSULTATION:
PRESBYTERIAN-ST. LUKE'S HOSPITAL — ALL INPATIENT AND OUTPATIENT CARE DIVISIONS
DIRECT PATIENT CARE:
PEDIATRIC PSYCHOLOGICAL DIAGNOSIS AND TREATMENT
DIRECTION AND SERVICE PROVISION, THERAPEUTIC DAY SCHOOL
PSYCHOLOGICAL THERAPY AND COUNSELING
BIOFEEDBACK TREATMENT PROGRAMS
MULTIPLE SCLEROSIS CENTER, INDIVIDUAL AND GROUP THERAPY PROGRAMS
JOHNSTON R. BOWMAN HEALTH CENTER FOR THE ELDERLY, PSYCHOLOGICAL DIAGNOSTIC AND THERAPEUTIC SERVICES

fit most from medical management.

The bottom block of Chart 2 reflects direct patient care activity, mostly carried out by the Psychology Department. Individuals in this department are responsible for pediatric psychological diagnosis and treatment. They provide direction and service in the Therapeutic Day School of the Department of Psychiatry. They provide psychological therapy and counseling to a wide variety of patients. In the Multiple Sclerosis Center they are responsible for individual and group therapy programs, and in the Johnston R. Bowman Health Center for the Elderly they are similarly responsible for psychological diagnostic and therapeutic services.

Let me turn now to some other elements of the College. If the basic science departments represent, in a sense, the big brothers and sisters of the college family, then the related health sciences departments represent the fledglings in the family. These are the departments which were originally housed in the College of Nursing and Allied Health Sciences. Although established there from one to four years ago, it cannot be said they flourished there.

The Department of Health Systems Management is composed of those individuals in our Medical Center who may be said to represent managerial functions raised to a professional level. It includes those faculty members with backgrounds in hospital administration, business administration, industrial engineering, computer technology, and the like. These are the people responsible for the online administration of the myriad affairs of the Medical Center. Why do we call their department Health Systems Management? Because we believe that the modern medical center system, such as ours, is quickly beginning to transcend, in its demands, the preparation of individuals who are just hospital administrators, just business administrators, just computer technologists, or the like. We believe that medical center system development will shortly be looking for individuals who, in their education, bridge and amalgamate the skills and outlooks of the separate managerial disciplines. Most of the individuals in this department have accomplished such amalgamation, not through their formal education, but through experience in this Medical Center. What this department plans to do is offer a master's degree program, perhaps later a doctoral program, which will train students to become, upon graduation, the kinds of system-sophisticated managers who will be required by the complex health care delivery system of the near future.

The Department of Religion and Health is the faculty home of our pastoral care services. In addition to their ministry with patients, members of this department participate in the teaching programs of the various other colleges, in such areas as exploration of ethical values, dealing with death and dying, etc. The department also has its own student body, young ministers in training who are enrolled in its clinical pastoral education program. Considering the general unorthodoxy of our Medical Center, it will probably not surprise you overly to learn that the chairman of the department, in addition to being a minister, also holds a Ph.D. in neurophysiology.

We now come to the Department of Related Health Programs. It is in connection with these programs that the old appellation, "allied health sciences," was used. We no longer use that term because, across the country, programs in allied health sciences are more and more being identified as two-year, sometimes one-year, certification programs. Our programs are, and will continue to be, at least at the baccalaureate level. Our medical technology program is baccalaureate; our clinical nutrition program is at the master's level. The program we intend to place as quickly as possible—in physical therapy, occupational therapy, health education, etc.—will be at the master's level.

Why do we see it as our business to educate young people in the related health fields? Are we not a medical institution? Are we not already committed heavily to training physicians? Yes, —but:

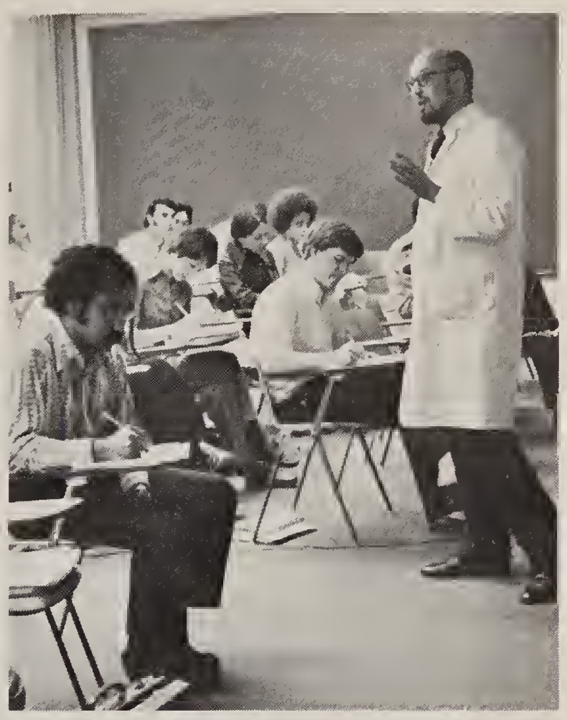
For every physician in practice there must be—figures vary —from 3½ to 5 trained individuals, necessary to guarantee that care of the patient will be adequate-to-optimal. In our commitment to the acronym RUSH, standing for the Rush University System for Health, we have said we will provide care for a 1 to 1½ million population, and that our educational system will produce the people to do this. When one thinks of the sick in the hospital beds at the north end of our complex who require support of the most scientifically trained technologists and nutritionists; when one thinks of the elderly and disabled down at the other end of our complex who need occupational and physical therapy specialized to their situation; then one begins to sense the magnitude of the task. And this does not even scratch the surface of need that will be uncovered as we implement our system of affiliations with a variety of remote hospitals which are part of our delivery network.

Where will these related health science students come from? Let me describe a phenomenon to you. We have an affiliation system with 14 fine liberal arts colleges and universities. What is happening in liberal arts education today? More and more students are now entering college with a set of motivations that says, "I would like to prepare myself to help people, to be involved with people, to better their existence." These are noble motivations. We certainly endorse them. What do most of these students see as the route by which this motivation can be played out? Medicine. Is there anything wrong with that? No, we need physicians. What *is* wrong is that only one out of five, perhaps only one out of eight students, who prepare through a premedical curriculum will ever be admitted to medical school. Is it because they are unqualified? Not in most instances. It is because there is not, and will not be, enough room in our medical colleges for these numbers.

What happens to these students, therefore, is that they spend four years in premedical preparation, only to face the frustration of being turned away, as they see it, from a helping career. And no alternative is offered. What we propose is two-fold. First, to elevate the standing of related health sciences so that they no longer occupy an intellectually and professionally disreputable position. We will do this through structuring rigorous educational programs. Second, we propose to reach out to the liberal arts college populations; to get to students early in their college careers; to show them that there are alternatives which satisfy their motivational drive and which, in our eyes, do not provide second-class citizenship. If we are able to do this, we will tap an important human resource; we will help to prevent that state of disspiritedness which comes from frustration of achievement; and we will, incidentally, train the people our system needs. Is that a tall order? Yes, it is.

Now, if it seems that launching a new college is a quixotic undertaking, let me surpass even that by briefly discussing the Graduate School. The Graduate School, as a component of the College, has the charge of being responsible for granting Ph.D.'s in the basic biological and behavioral research disciplines. I don't think there has been a less promising time, in the educational history of our country, since the 30s, to try to start a new graduate school. Federal funding is disappearing; private philanthropy has become somewhat jaundiced about supporting graduate education; even some of our country's scientific elite are saying the United States has no need to increase the numbers of young people with graduate education. A recent presidential commission, established to study the question, cast the entrails and augured a future which would be adequately served by a reduction in graduate school effort. Why, then, have we established a Graduate School at Rush, and what progress are we making?

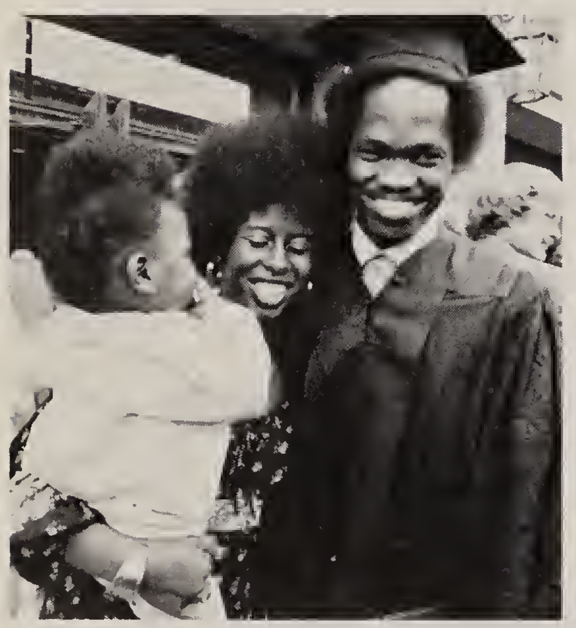
Reasons for establishing our Graduate School are consistent with the basic assumptions governing most of our institutional conduct. We are trying to demonstrate, as prototype, the viability of a broadly cast health delivery system based upon the private sector. Such a system, to be responsive, must generate the trained personnel needed to make the system work. Among such personnel, basic scientists in the biological and behavioral disciplines are integral to the development of those advances in knowledge which improve health care. Therefore, the production of such scientists becomes an integral part of the system. The establishment of our Graduate School also represents a keeping of the faith with our scientific community. It provides the basis for our scientists to engage in that process of self-replication which is so important to the maintenance of intellectual and scholarly vitality.

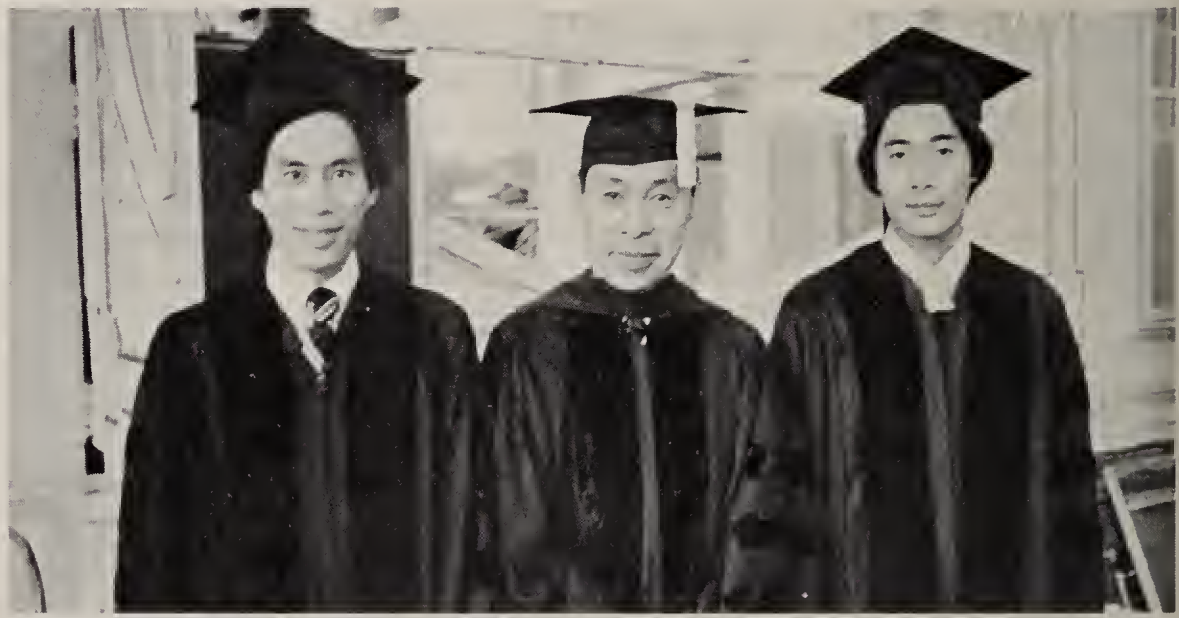


Henry Gewurz, M.D., discusses immunology with students.

What progress are we making? Despite the problems and the pessimistic prophecies referred to, we are doing rather well. Our faculty is ingenious and industrious and has been exceptionally supportive of what we are trying to do. Through the faculty's efforts we have already developed and approved three Ph.D. programs: in Physiology, Immunology, and Biochemistry. Students have been recruited, screened, and admitted to the first year of each of these programs. During the coming year, it is expected that two to three additional programs will reach the same stage. The numbers of students admitted to our Graduate School will not be high, as such numbers go. But the students we do admit will represent no compromise with the highest standards we can apply. It is a distinct pleasure, therefore, to be able to issue an invitation to our commencement excercises about four years from now, to join us in seeing the first Ph.D.'s receiving their Rush degrees.

1977 Commencement





Commencement

Edward McCormick Blair, Chairman of the Trustees, and James A. Campbell, M.D., President of the Medical Center, conferred degrees upon 248 graduates at commencement ceremonies of Rush University, held June 11, at Orchestra Hall.

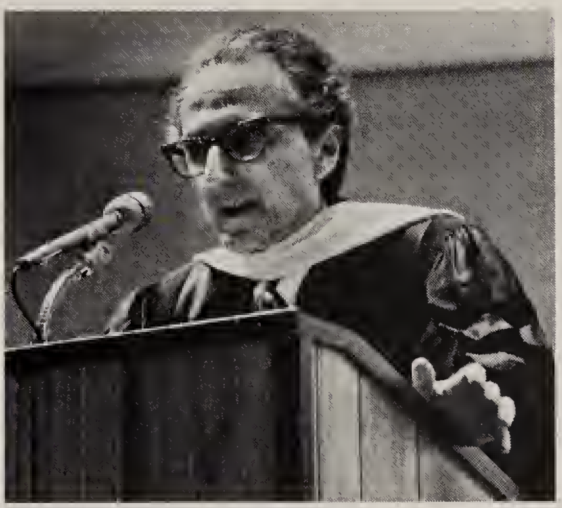
The ceremonies marked the third full commencement for Rush University, the second commencement for the College of Health Sciences, the third for the College of Nursing, and the 103rd for Rush Medical College. Eighty-six received the degree of Doctor of Medicine, 55 the Master of Science degree with a major in nursing, eight the Master of Science degree with a major in clinical nutrition, 87 the Bachelor of Science degree with a major in medical technology, and two the Bachelor of Science degree with a major in medicine.

An honorary degree of Doctor of Science was conferred upon David A. Hamburg, M.D., President of the Institute of Medicine, National Academy of Sciences, Washington, D.C. Dr. Hamburg presented the commencement address, "New Levels of Collaboration in Health Care" (see page 22).

During the commencement ceremonies, Dr. Campbell reminded the audience that "this is a day for families." In keeping with this spirit, the graduates faced their families and friends at the conclusion of the ceremony to recite the Oath of the Health Professional and the Oath of the Physician.

David A. Hamburg, Honorary Doctor of Science

David A. Hamburg, M.D., is President of the Institute of Medicine of the National Academy of Sciences. During the last 20 years, Dr. Hamburg has made notable contributions to behavioral research. His studies have been focused on the evolutionary significance of the stress response in higher primates, and on how human beings cope with life stress. His research has included patients with severe burns, parents of leukemic children, patients involved in organ transplantation, and concentration camp survivors. These studies of coping mechanisms and the resilience of human behavior have direct implications for preventive as well as therapeutic psychiatry.



David A. Hamburg, M.D.

Among his professional activities, Dr. Hamburg has served on many committees of the National Institutes of Health, the advisory committees of several regional primate centers, and many bodies of the American Psychiatric Association. He also has been a scientific consultant to UNESCO, a member of the President's Science Advisory Committee, and a member of the Expert Advisory Panel on Mental Health of the World Health Organization.

A native of Evansville, Indiana, Dr. Hamburg received his A.B. degree from Indiana University in 1944, and his M.D. degree from Indiana University School of Medicine in 1947. He received his training in psychiatry at the Yale University School of Medicine and at the Institute for Psychosomatic and Psychiatric Research and Training at Michael Reese Hospital; after a tour of duty in the Army, he returned to the Institute as Assistant and Associate Director. In 1961, Dr. Hamburg was appointed Professor and Chairman of the Department of Psychiatry at Stanford University School of Medicine, a post he held for 11 years. His department at Stanford became a model for adult departments of behavioral sciences.

Dr. Hamburg has made significant contributions to the National Academy of Sciences and the National Research Council in the field of mental health. In the past several years he has explored the relationship of mental health and behavioral science to public policy. His oustanding contributions in this area have earned him his election as the third President of the Institute of Medicine of the National Academy of Sciences.

Honors Assembly

The first annual Rush University Honors Assembly was held Commencement morning, June 11, in the Lecture Center of the Academic Facility. James A. Campbell, M.D., President of the Medical Center, was the Master of Ceremonies at the assembly, convened to honor outstanding students and teachers of the academic year 1976-77.

In introducing the honors presentations, Dr. Campbell said "We are here today because this is an honors assembly, which means recognition for outstanding achievement, for scholarship, for dedication, for skills obtained, and for leadership, but I would underscore that the fundamental root in 'honors' is the word without the 's'—*honor*, which clearly denotes integrity."

Dr. Campbell concluded,

"Rush is a place of instant tradition, and this tradition of an honors assembly on the morning of Commencement is absolutely superb. The chance to recognize our outstanding people in a group which is outstanding by its very selection is indeed a treat. On behalf of the trustees, the faculty, your fellow students, and your families and friends, congratulations to you all and very best wishes."

The Awards

The Phoenix Award

To Leo M. Henikoff, M.D., for outstanding physician-teacher as voted by the Rush Medical College Class of 1977. Dr. Henikoff is Vice President, Medical Affairs, and Dean, Rush Medical College (acting). He is associate professor of Pediatrics at the College and associate attending physician at Presbyterian-St. Luke's Hospital.

The Daniel Brainard Award

To Philip R. Liebson, M.D., voted by the Class of 1977 as the outstanding teacher in the basic sciences. Dr. Liebson came to the Medical Center in 1972 and is associate professor of Internal Medicine at the College and an associate attending physician at Presbyterian-St. Luke's Hospital.

The Nathan M. Freer Prize

To Scott Replogle, voted by the faculty as the outstanding senior medical student. This prize was endowed in 1892.

The Henry M. Lyman Memorial Prize

To Kim Fehir, awarded by the faculty for outstanding work as a junior medical student.

The David Peck Prize

To James Nichols, for contributions to the Student National Medical Association.

The Janet M. Glasgow American Medical Women's Association Achievement Citation

To Donna Rabin and Patricia Shanks, 1977 graduates of Rush

Scott Replogle, M.D., recipient of the Nathan Freer Prize, and Leo M. Henikoff, M.D., Dean, Rush Medical College (acting).

James Nichols, recipient of the David Peck Prize, is congratulated by John S. Graettinger, M.D., Dean, Faculty Affairs, Rush University. Also pictured is Robert Jordan, M.D., who presented the award.

Leo M. Henikoff, M.D., recipient of the Phoenix Award, and James A. Campbell, M.D.

Luther Christman, Ph.D., R.N., congratulates Rebecca Klein, recipient of the College of Nursing Dean's Award.

Medical College.

Alpha Omega Alpha Honor Medical Society Graduates

Gary Deutsch, co-president
Ross Ungerleider, co-president
John Bastian
Thomas Bleck
Richard Ellis
Renee Garrick*
Max Harris
Anthony Kotin
Marc Lorber
David Margolin
Rick Nishimura*
Daniel Pepper
James Rejowski*
Arnold Robin
Lorry Rubin*
Richard Shapiro
Donald Skor*

*denotes students installed as members in 1976

College of Nursing Undergraduate Faculty Award

To Janet Snow, R.N., M.S., voted by senior nursing students as outstanding teacher. Ms. Snow is an instructor of Pediatric Nursing in the College of Nursing.

Rush-Presbyterian-St. Luke's Nurse Alumni Association Award

To Susan Williger, for the outstanding nurse graduate.

College of Nursing Dean's Award

To Rebecca Klein, awarded for superior academic leadership in the undergraduate nursing program.

Local Honor Society of College of Nursing

Undergraduate Nursing

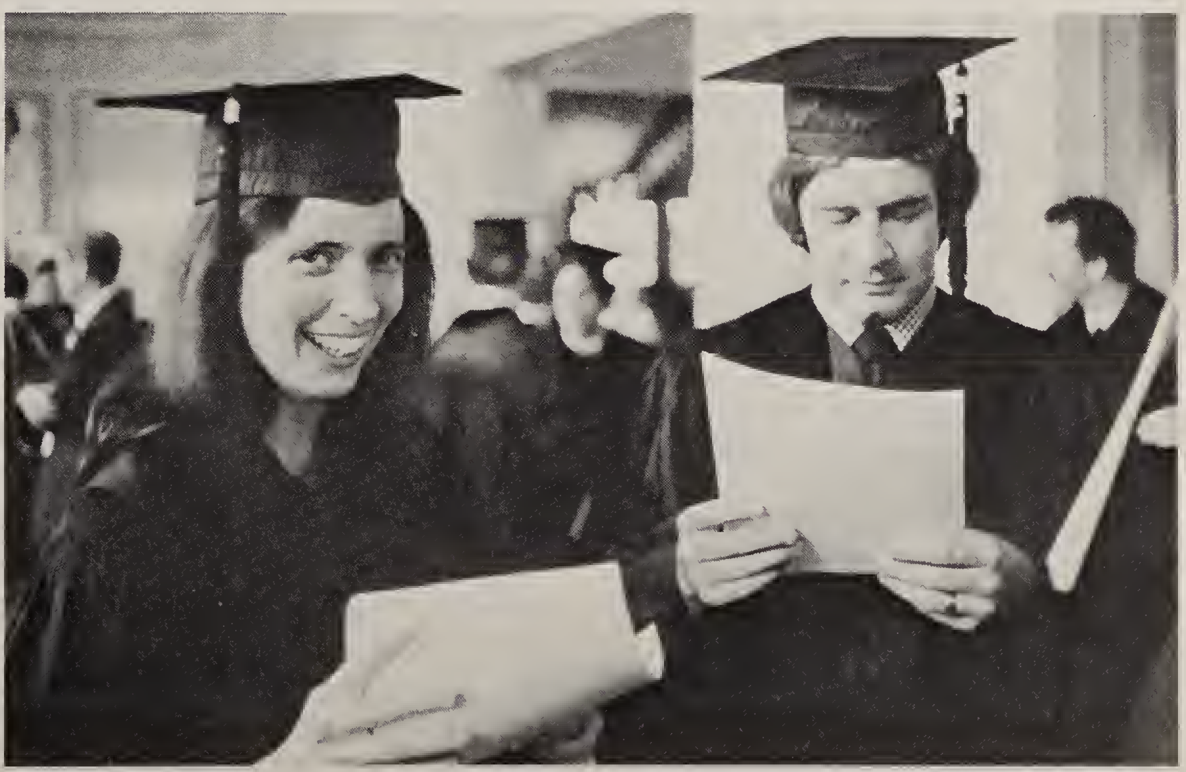
Alice Brennan
Nancy Buthman
Mary Chase-Ziolek
Agnes Chown
Linda Emidy
Kimberly Fabel
Lisa Findeisen
Kevin Kissane
Katharine Lutz
Linda McFarlin
Kathleen Peach
Cynthia Pytko
Lee Ann White
Susan Williger

Graduate Nursing

Mary Ann Berg
Karen Fontaine
Christine Kasper
Mary Jane McGinty
Judy Prendergast
Allison Schned
Mary Ann Schroeder
Janice Smodilla
Nancy Wuggazer

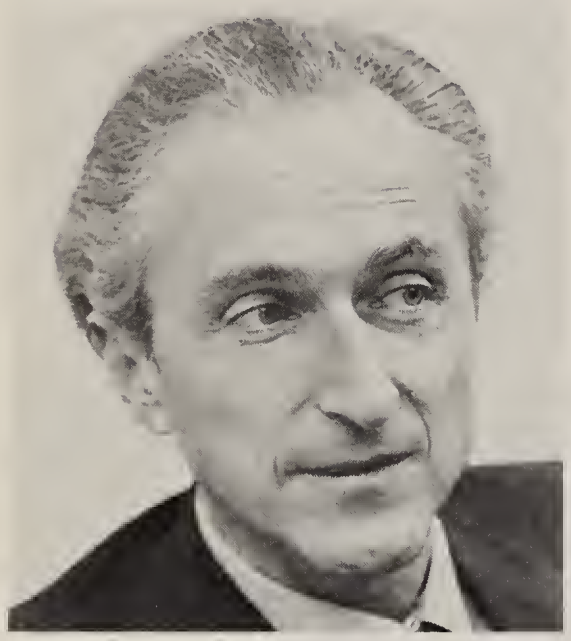
Janet Snow, R.N., M.S. (right), is presented the College of Nursing Undergraduate Faculty Award by Theresa Carrabine.

Philip R. Liebson, M.D., receives Daniel Brainard Award from Frederic G. Nicola, 1977 graduate of Rush Medical College.



New Levels of Collaboration in Health Care

by
David A. Hamburg, M.D.



David A. Hamburg, M.D.

(*The following is a condensate of the Commencement Address delivered to graduates of Rush University, June 11, 1977, at Orchestra Hall in Chicago. Dr. Hamburg, recipient of the honorary degree of Doctor of Sciences, is currently on leave from Stanford University, serving as president of the Institute of Medicine, National Academy of Sciences, Washington, D.C.*)

Your chances for a fulfilling and socially useful career are, if you will forgive an old-fashioned word, *inspiring*. You have been very fortunate to attend one of the most interesting and imaginative schools in the country—one of the most important new developments in the health field in our time, and one that gives me hope for what may develop as a health care system in this country. Rush University has served you well, and you have been lucky to be here in a time of ferment and development. Yours will not be an easy career, partly for reasons that are very old—the nature of your responsibilities will be life and death—but partly also for reasons astonishingly new. It may be fruitful to consider the larger social context in which the health professions are now emerging.

We health professionals are very lucky people, but we should not take that luck for granted. Public opinion surveys place the health profession very high, at or near the top of public respect. No doubt this is a commentary on the value society places on individual human life, the ability to prolong life with our current techniques, and the prospects of prolonging it even further with discoveries to come.

And yet, 1977 is also a perplexing time to consider health care. It is a time of satisfaction, but also a time of concern, a time of progress and poverty, of hope and apprehension. If we look back a century or two, health care has come a fantastic distance. Think of the progress in the industrial countries in the nineteenth and twentieth centuries—the things we now take for granted: sanitation, hygiene measures affecting water and the handling of human excretion, and the development of immunization—all had strong impact on infectious diseases. Think about the development of agricultural production with modern techniques and what that has meant to the adequacy and dependability of nutrition—again with a strong impact on infectious diseases but on other diseases as well. Think of the changes in reproductive practices, which tended to make for a more even balance between population and resources. They also helped provide, in principle, adequate care for each child. These changes in reproductive practices fostered a general improvement in health over a century or so.

In the 30 years since I got out of school with not much but aspirin and good wishes, we have seen broad advances in the life sciences, the emergence of the behavioral sciences, the progress in epidemiology and biostatistics. The intellectual impact has been profound. A deeper understanding of living organisms than ever before in history has been permitted us. The impact on health is significant, but less than we might wish—still focusing mainly on infectious diseases, through immunization, antibiotics, and other gains. More developments are on the horizon: for example, effective treatment for common and serious disorders such as hypertension and schizophrenia.

Rogers and Blendon, in summarizing the national data for the past 15 years, suggest that American medical care and health are indeed getting better. We have improved the availability of physicians' services and largely eliminated the gap between visits made by rich and poor, or white and black citizens. We have greatly expanded the number of health professionals who deliver medical care. Better organized programs now serve groups with special health problems; they have reduced mortality and morbidity. A whole variety of health statistics show improvement.

I venture to suggest that you will see much more transformation in the field in your professional lifetime, even in the next decade or two. In biomedical research there will be advances in biochemistry, molecular biology, neurobiology, and behavioral biology. Remarkable new work is being done on hypothalamic and pituitary peptides. Immunology, cardiovascular physiology, pathology, endocrinology from cell to organism, and developmental biology—to pick a few—are advancing at a relatively rapid rate.

A lot has been accomplished, and there are bright hopes for the future. But many concerns also have arisen. I will very briefly mention only three.

1. Some social groups still do not get the benefit of adequate care—mostly the poor and socially disadvantaged. Certain age groups, such as early adolescents, crucially important in my view, also are neglected at present.

2. The research effort has not been in reasonable relation to the burden of illness. Perhaps the most striking example in the developing countries is the enormous burden of tropical diseases. In our own country there is also a discrepancy between the main thrust of research and the principal burden of illness, e.g., the diseases caused by cigarette smoking.

3. In the educational effort, which you have addressed imaginatively here at Rush, considerable criticism exists that medical education has not been in reasonable relation to the burden of illness. Much teaching, especially in the clinical experience, deals with rare, if fascinating, diseases, and the commoner diseases tend to get less attention than their prevalence in the population might logically warrant. You have made constructive innovations here, as elsewhere, in this remarkable university.

What is the burden of illness in the U.S. today? The data show the major problems to be:

1. Cardiovascular disease
2. Accidents and violence
3. Malignant neoplasms
4. Severe mental disorders
5. Respiratory illness

These represent about 50 percent of all complaints brought to physicians and hospitals. You will notice they have large behavioral and environmental components—heavy cigarette smoking, heavy alcohol use, risky driving, and so on. When you are talking about major risk factors associated with early death, you are not only talking of our familiar aspects of medical care, which are very important, but about speed on the highways, failure to wear seatbelts, heavy use of alcohol, lack of exercise, poor nutrition, including over-nutrition, smoking, major stress, lack of safety in the working environment. The behavioral and environmental factors are rather more important than we had realized. I would predict that in the future we will be putting more emphasis on the behavioral and environmental aspects of health in research, in education, and in patient care.

An interesting study reported by Breslow and Belloc, in California, of about 7,000 adults followed for five and one-half years showed that life expectancy and health are significantly related to basic health habits. Here are the good habits: Three meals a day at regular times, with no large snacks in between; breakfast every day; moderate exercise two or three times a week; seven or eight hours sleep every night; no smoking; moderate weight; little or no alcohol intake. It was shown that a 45-year-old man who practices zero to three of these seven habits has a life expectancy to age 67. A 45-year-old man with six to seven of these habits, has a life expectancy to age 78. This suggests that at least eleven years can be added to life expectancy at age 45 by changing lifestyles.

What I am driving at is that, beyond treatment, which has improved so much and will improve more, lies the best intervention of all—prevention of the problem in the first place. Experience in California, Finland, and elsewhere suggests that community-based prevention programs, combining modern techniques of clinical medicine, public health, and behavioral science can effectively reduce the risk of, say, cardiovascular disease and some forms of cancer as well.

My own strictly personal expectations are that implementation of a national health insurance plan will come gradually. I think the benefits will be modest initially—the so-called "decent minimum." I hope this will mean reasonably adequate care, even if not comprehensive care. I expect some protection against financial catastrophes and health crises. My own guess is that we will have a mixed public and private system, building on existing institutions, which has been so characteristic in this country. There will be concomitant multifaceted cost controls. I hope all this will be linked to an enduring concern for quality care. In principle, I think the insurers, whether government or private, will eventually pay mainly for well-validated services both in treatment and prevention, and they will pay in some reasonable relation to the actual cost of those services. I hope the plan will offer some front-end money for research support, so that one can determine what is a well-validated service, what is a useful service, and how we can improve those services in the future.

The cost of health care is far outrunning the general inflation rates in America and most of the industrialized countries. One element in the cost inflation rate is new technology of high promise and also high cost. The Institute of Medicine has recently reported on the C.A.T. scanner—something that is very promising but also very costly. The next generation of now-unknown instruments may cost much more and be even more promising. The problem of how to distribute them equitably and determine what they will and will not do is a difficult one. In the next decade or two we may well see a fundamental change in the standards of clinical medicine. Traditionally, we have relied heavily on evidence based on clinical impressions and informed judgment. Agreement on that evidence by leaders in the field has usually been accepted as the guide to clinical practice as well as to reimbursement by third-party payers. Many significant advances in diagnosis and treatment have been achieved in just that way; however, because of growing concern with both cost and quality, I think there is likely eventually to be a requirement for clinical trials meeting high standards of experimental design and statistical significance before introduction of an expensive new technology into widespread use. Promising new technology that involves high costs or high risks will most likely be supported only in controlled clinical settings leading to definitive evidence. When that evidence is in, reimbursement will become available in all suitable treatment settings.

Such a plan would require more efficiency than we now have. It would require rapid design of a cooperative, controlled clinical trial, probably national in scale. This will introduce some delay, but if done well, can improve quality of care and decrease cost. We could determine scientifically what a new technology will and will not do. We could determine under what conditions its use is reasonably safe, its value clear and whether the costs are proportional to well-validated clinical uses and appropriate to actual health needs.

That kind of approach, of course, will not deal with unforeseeable, long-term, adverse side effects. Other methods will have to be devised for detecting such effects as soon as possible. We need ways to have distant early warning signals in clinical practice. As you see, the great tools that science is bringing to health care are indeed more powerful than the old tools —both for better and for worse.

The new world of health care emerging in your professional lifetime will involve working with people from many different backgrounds; there will be more diversity than ever before. How can we achieve genuine collaboration across traditionally specialized barriers to tackle effectively the underlying problems that preventive health care education, and the sciences face? The problems are formidable; the stakes are high; the opportunities are exceptional. The public needs to enlist your help, stimulate your interest, mobilize the finest talent in a dedicated joint effort involving many lines of endeavor. It is not a task that will be finished soon or, I suppose, ever. We work in a time of great fascination and challenge. We inherited an unprecedented legacy of knowledge and competence. We take this legacy into a new world also unprecedented in scale, complexity, heterogeneity, and perhaps also in risk. So much to gain, so much to lose!

In the many active, thoughtful, compassionate years of your future professional work, I can assure you graduates of three facts: 1. You have been very well prepared at this unique health university—Rush University; 2. What you have gained here, not only in knowledge and skills, but also in friendship, will never be lost; 3. In the years to come, you certainly will not be bored. Good luck!

Reminiscing about Medicine's Progress

by
Samuel G. Taylor III, M.D. ('31)

Samuel G. Taylor III, M.D.

Samuel G. Taylor, III is director of the Illinois Cancer Council which coordinates cancer programs at Rush, Northwestern University, The University of Chicago, and several other institutions. While Director of the Section of Medical Oncology, Department of Medicine, for more than 20 years, he was instrumental in establishing the Rush Cancer Center. Dr. Taylor's friends and former patients recently established a named chair in oncology in his honor at Rush-Presbyterian-St. Luke's Medical Center.

My first consciousness of medicine was at the age of four when old Dr. Gregory poured chloroform on a towel held over my nose and mouth while my dad held me down on the kitchen table. When I awoke, my top and bottom hurt from having had a tonsillectomy and circumcision.

Vivid in my memory is the treatment of most of my childhood ailments with calomel followed by a purge. The major therapeutic effect was to keep me indoors. At the age of 12, during World War I, I was a victim of "Spanish flu" complicated by a mastoiditis with two-thirds loss of hearing in one ear, which would have been avoided had antibiotics been available. This experience, however, with its long hospital stay, stimulated my first interest in medicine and caused me to select this as the career of my choice.

Medicine was not a popular choice for young men graduating from college in the early 1920s. Only four of my class in Yale selected this as a career; most of the rest went to Wall Street to make a killing. This was some years before the stock market crash. One did not have to be a member of Phi Beta Kappa then to be admitted to medical school. I doubt if a modern admission committee looking over my scholastic record would admit me. I also wonder if I could now stand the tuition of $1,200 a quarter, instead of the $85 I had to pay then.

When I was a medical student, pernicious anemia, previously considered a fatal disease, was found to be controlled by feeding the patient large quantities of raw liver. Some patients preferred death to such a diet. This was a far cry from the ease of management of the disease by monthly shots of B12. Systemic antibiotics were unheard of and the only treatment for leukemia was Fowler's solution—and orthovoltage therapy of the spleen.

During my internship at Chicago's Cook County Hospital, the major cause of death was pneumonia (80 percent mortality). Those who recovered frequently had empyema, necessitating long hospital stays. Oxygen was very difficult to obtain and its means of administration were crude. Syphilis was a common disease and effectively treatable only in the relatively early stages with long courses of arsenicals and bismuth. Tabes dorsalis and dementia paralytica were very common neurological conditions.

The contagious disease wards were crowded with scarlet fever and erysipelas cases. Children were frequently admitted because of cerebral damage from whooping cough or measles encephalitis. Scarlet fever antitoxin was just being introduced. Though a great advance, violent anaphylactic reactions were not uncommon.

A few years after my internship the first sulfa drugs became available, ushering in a new era in medicine. With these drugs new means of controlling many infections were made possible, though results in treating some infections were very disappointing.

One of the most gratifying experiences in my early practice of medicine was when, after many frustrating experiences of trying to no avail to control subacute bacterial endocarditis, I was able to obtain sufficient penicillin to produce a complete recovery from this previously always fatal disease.

While still on the house staff at Cook County Hospital, with Dr. Willard Thompson as my mentor, I had the opportunity to work on patients with Addison's disease. At this time most of these patients died, despite recent additions to therapy by the use of extra salt and soda. The Wilson Laboratories developed a method of obtaining an extract of the adrenals from hogs, which was effective as replacement therapy for these patients dying in adrenal crisis. Without the generosity of the Wilson Laboratories, the cost of this would have been prohibitive. Later, desoxycorticosterone became available and pellets of this were inserted subcutaneously about every three months in these patients. This simplified management, but, as it controlled only the minimal balance, it was not adequate for patients in crisis or patients with severe disease. With the advent of oral cortisone the challenge of management of this disease was eliminated.

Breast cancer, when not controllable by surgery or x-ray, was untreatable in the early days of my practice. A few patients had been reported to be improved following radiation of the ovaries or oophorectomy.

Scattered reports of individual cases improved with the synthetic estrogen, stilbestrol, and, with testosterone, appeared in the literature, but it wasn't until the late 1940s that studies demonstrated the definite value of hormone manipulation, additive or ablative, in the treatment of these unfortunate individuals.

Witnessing bone healing of destructive bone metastases and rehabilitation of these patients by hormone alteration was very gratifying. These exciting advances were diluted, however, by being of only temporary benefit and in only a minority of these patients. Selection of proper therapy was by guess and by gosh. With better means of selection of hormone therapy and the availability of more effective drug therapy, improved results are now available.

Just in my brief experience the following types of cancer have been shown at times to be controlled for long periods of time and perhaps cured: embryonal carcinoma of the testis, Hodgkin's disease, non-Hodgkin's lymphomas, Wilms' tumor, choriocarcinoma, and certain other pediatric malignancies. It makes me feel certain that the time is coming when many forms of disseminated cancer will be cured. We are now witnessing a major effort in the medical profession to prevent the development of fatal metastases by giving adjuvant systemic therapy following surgery or radiation.

The treatment of thyrotoxicosis has shown great changes since I first treated patients with this disease. The introduction of iodine first, with the addition of antithyroid drugs, improved patients for surgery, the latter at times making surgery unnecessary. Then, radioactive iodine was introduced, which has practically replaced surgery in toxic goiter. I remember how I used to use pneumothorax in the treatment of tuberculosis, and the number of patients with TB I referred to the chest surgeon and to the sanitarium before antibiotics revolutionized the treatment and closed the TB sanitariums.

How simple the management of diabetes has become since the days of the high-fat low-carbohydrate diet and the dependence on regular insulin requiring injections two to four times a day even with the carefully weighed diet!

New treatments have not always meant progress in medicine. The theory of focus of infection as a cause of arthritis and a number of other diseases brought on the unnecessary extracting of teeth, removing of tonsils and massaging of the prostate; the use of x-ray therapy for acne, for the shrinking of tonsils and treating the thymus gland in infants, children, and young adults increased the incidence of thyroid cancer.

The premature introduction of many drugs has caused more harm than good. Although not all new treatments represent progress in medicine, we have come a long, long way since I started medical school.

Other recollections include the $4 cost of a bed and all standard medications in a 10-bed ward at a major medical center where I had my clerkship.

Also, the problem I had during Prohibition with certain patients, usually college classmates, who felt they must have a prescription for Scotch or bourbon to treat recurring upper-respiratory infections, as prescription liquor was superior to that of Al Capone.

Which, I wonder, is more effective today for the common cold, alcohol or antibiotics? Medical progress in the treatment of the common cold is the same as when I interned—a treated cold lasts seven days, an untreated one lasts a week.

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RushRounds

NIMH Grants $722,000 to Rush-Presbyterian-St. Luke's to Study Causes and Treatment of Depression

A $722,000 grant has been awarded by the National Institute of Mental Health to Rush-Presbyterian-St. Luke's Medical Center as part of a massive collaborative research effort to determine what causes depression and to predict outcomes for patients under treatment.

Jan Fawcett, M.D., Stanley G. Harris, Sr., Chairman of Psychiatry at the Medical Center is principal investigator for the Chicago area study, and William A. Scheftner, M.D., Medical Director of the Acute Care Psychiatric Unit, is project director.

Other institutions participating in the five-year national study are Harvard Medical Center, Columbia-Presbyterian Medical Center in New York, the University of Iowa Medical Center, and Washington University Medical Center.

Dr. Fawcett said the project is the largest ever undertaken to provide a data base defining syndromes of depression and the conditions leading to its development. Nationally, 1,050 patients with depression will be studied, plus 1,800 brothers, sisters, and parents, 600 spouses, and 500 persons in a control group matched to patients by age, sex, and socioeconomic situation.

Of these, Rush-Presbyterian-St. Luke's will study 250 patients, members of their families, and 110 persons in a control group.

"Depression represents a major disorder accounting for a large degree of human suffering which continues to be underestimated both by the mental health profession and by the general public," Dr. Fawcett said.

"Although exact figures of incidence and prevalence are not available, the most conservative estimates indicate that 2 to 4 percent of the population at any given time suffers from clinical depression. Moreover, recent surveys indicate that as many as 10 to 20 percent of adults between the ages of 18 and 74 experience a depression with significant symptoms at some points during their lifetime," he said.

A major obstacle to assimilating and codifying national data has been the lack of criteria for describing and classifying depression, Dr. Fawcett said.

"One practitioner may define neurosis as merely the absence of delusions or hallucinations, while another may use the term to measure the severity of incapacitating mental illness. In this study, representatives of all participating institutions already have agreed on a common terminology and methodology for investigation. Approximately 20 different research instruments and models have been developed, allowing for cross-referencing and refinement of data. We will be able to provide answers based on data rather than concepts."

A concurrent program funded by the National Institute of Mental Health several years ago is investigating biologic factors in the genesis and treatment of depression, Dr. Fawcett said.

"Our study will define different syndromes of depression and the condition under which depression developed. We will be looking at the genetic basis of depression, possible correlations by blood-typing, the role of life events and environmental stress, and personality factors. Follow-up studies will also permit us to measure outcomes of treatment."

Medical Students, Residents Offered More Psychiatric Training

"It's not enough for a physician to be able to correctly diagnose and properly treat his patient's physical ailments. It has become increasingly obvious that a few courses and a basic clerkship in psychiatry are not enough to train the primary care physician who must spend a fair share of his time dealing with the emotional problems of his patient," says Stephanie Cavanaugh, M.D., Assistant Professor of Psychiatry and Medicine.

Dr. Cavanaugh is coordinator of a program, recently funded for over $36,000 by the National Institute of Mental Health, in the second year of a three-year grant.

"In our training program we try to help the trainee learn to develop a rapport with his patients and interview them more skillfully to better understand their verbal and nonverbal communication," Dr. Cavanaugh said. "He learns to use the doctor-patient relationship to enhance the overall well-being of the patient."

With the emphasis on learning psychiatric principles in the process of treating patients on nonpsychiatric wards, the training program is an "ideal setting in which to help the student or trainee discover his own feelings, attitudes and values which may hinder his care of the patient." The program offers an opportunity to integrate psychiatric skills and knowledge and helps the trainee understand the different sets of diagnostic and treatment problems involved in caring for a patient with primary medical illness versus primary psychiatric illness.

A consultation team of psychiatrists offers lectures, videotapes, films, role-playing, one-way mirror demonstrations, seminars, and case presentations. However, the most successful form of teaching is direct consultation by a psychiatrist about a trainee's problem patient.

"There is no substitute for learning psychiatric skills and applying them while caring for one's own medically and surgically ill patients," Dr. Cavanaugh said.

Stephanie Cavanaugh, M.D., [right], talks with residents and medical students.

HEW Funds Research on Power Source for Artificial Hearts

Erich Brueschke, M.D.

The energy required for a cardiac pacemaker is minimal; the battery for this implanted device may last two or three years without replacement. Supplying power for an artificial heart (or a left ventricular assist device — one- half an artificial heart) is a different matter entirely.

The approximately 25 watts required for an artificial heart system is about a million times greater than that needed to power a cardiac pacemaker. How to reliably deliver this much power continuously to the artificial heart, through the intact skin, constitutes one significant deterrent to the use of cardiac assist devices for certain of the 900,000 people who die each year of cardiovascular disease.

Recently, however, such research received a boost in the form of a three-year grant, in excess of $230,000, awarded by the Devices and Technology Branch of the Division of Heart and Vascular Diseases of HEW, to Rush-Presbyterian-St. Luke's Medical Center with Erich Brueschke, M.D., Professor of Family Practice and Physiology, as Principal Investigator. Robert Hauser, M.D., Assistant Professor of Medicine, is the Co-Principal Investigator.

The project will involve extensive interdisciplinary activity in the fields of electronics, biomedical engineering, physiology, surgery, and medicine. The Illinois Institute of Technology Research Institute will participate in the program as subcontractor, with James R. Wingfield as program manager. They will do studies of transformer design and biomaterial and heat transfer. Animal surgeons at Rush include Michael Haklin and Thomas Welsh, D.V.M., Ph.D., Director of the Animal Resources Facility. Randall McNally, M.D., of the Reconstructive and Plastic Surgery service is special consultant on surgical techniques. Participating at Rush will be Kenneth English, Director of Rush's Research Machining Laboratory, and Verlin Giuffre, Director of the Electronics Research Facility. Kenneth Mayerhofer, Physiologic Monitoring Technician, Section of Cardiology, will assist in bioengineering and biomaterial studies.

Animal studies will be conducted on calves, whose heart size approximates that in humans. This animal has also been extensively used in the development of cardiac assist devices. Power will be conducted through the upper abdominal wall where the skin is loose enough to allow the implantation of a transformer. Care must be taken to control heating of the skin unduly, to prevent tissue destruction and infection.

The method to be investigated employs percutaneous cables in the immediate postoperative period following implantation of a transformer secondary inside a pedicle tube flap. An *in vivo* investigation of material/tissue ingrowth and interaction will also be carried out. Ingrowth characteristics of epithelial tissue into polymeric velours and velour/silicone rubber composite materials will also be explored. Each concept developed will be evaluated for a period of up to 18 months to determine the long-term efficacy of the approach.

Rush University Office of Continuing Education

An Office of Continuing Education in Rush University has been established by Rush-Presbyterian-St. Luke's Medical Center to expand educational programs to practicing physicians, nurses and other health professionals.

Named Associate Dean with responsibility for the University's continuing education programs was Harold A. Paul, M.D., associate professor in General Surgery, Rush Medical College, and senior attending surgeon, Presbyterian-St. Luke's Hospital, who will coordinate the efforts of Rush Medical College, the College of Nursing, and the College of Health Sciences.

According to James A. Campbell, M.D., president of the Medical Center, the responsibilities of a health university must continue beyond undergraduate, graduate, and postgraduate course work.

"Rapid changes in health technology and a constantly expanding body of medical knowledge have mandated new educational programs for professionals who must keep abreast of developments to serve their patients. A number of states already have set continuing educational requirements in order for physicians to be relicensed and the trend is for similar legislation in nursing. Professional and specialty societies also are insisting on continuing education as a requirement for membership and Board certification. Our programs will be designed to help a variety of professionals in the health field to meet personal goals within their calling," Dr. Campbell said.

"Dr. Paul will coordinate the efforts of programs in medicine, nursing, the sciences, administrative and management areas, and will be particularly concerned with assuring cross-professional, multidisciplinary education in order to maximize use of our resources and people," Dr. Campbell said.

As an initial offering organized through the office of Continuing Education, Dr. Paul plans a five-session course sponsored by the Medical Center's Department of Family Practice, utilizing the resources of eleven departments. The course, which began in September, 1977 and continues for five Wednesdays, has been accredited by the American Medical Association and the American Academy of Family Physicians. Other programs will draw upon the full resources of the Medical Center, including its three colleges, and the staffs of affiliated institutions.

Dr. Paul was graduated from Wheaton College and earned his doctor of medicine degree from the University of Illinois in 1954. He also holds a Master in Public Health degree in Medical Care Organization from the University of Michigan. He is a member of numerous scientific and professional societies, and a board member of the Illinois Council on Continuing Medical Education.

Since 1970 Dr. Paul has been senior coordinator for the Rush Care Network involving program development for hospitals and health care institutions affiliated with the Medical Center. He will continue to carry responsibilities in this area.

Spine Center Established

A Spine Center, believed to be the first of its kind in the country, was developed recently as a result of the diagnostic and treatment progress of Ronald DeWald, M.D., orthopedic surgeon at the Medical Center.

Spinal deformities have been the bane of medicine since the beginning of recorded medical history. Hippocrates described scoliosis, or curvature of the spine, but from his time until the early 1900s, there was nothing to help these patients.

The tragedy today is that 750,000 school children are walking around with some degree of spinal deformity when treatment *is* available. If undiagnosed and untreated, these children run the risk of acquiring a hunchbacked appearance, but more important is their risk of chronic heart and respiratory problems.

This model of a human spine illustrates curvature of the spine—scoliosis.

"Even today," says Dr. DeWald, "U.S. medical schools offer only a smattering of orthopedics to students, and many spinal problems go unrecognized. When scoliosis *is* diagnosed, many physicians are unaware of what can be done about it, or they tend to over-treat. The problem of spinal deformities needs to be brought to the attention of physicians and parents alike. Specifically, 10 to 15 percent of school children in the 10- to 14-year-old group have spinal deformities. If uncorrected, 2 percent will have a severe problem."

As head of the Rush Spine Center, Dr. DeWald, an expert in scoliosis, saw 1,200 patients last year, about 300 of whom needed spinal surgery. In others, spinal problems were corrected, and further deterioration of the spine was prevented.

The Spine Center contains its own intensive care area and patient rooms for postoperative recovery from spinal surgery. Special support services include electrical beds; respiratory, neurologic, and cardiac monitoring; skeletal traction; body casting; and physical and occupational therapy.

Dr. DeWald has initiated the team approach in treating spine patients. The Center serves as a focus for instructing medical students, nurses, visiting orthopedic surgeons, and orthopedic residents. It also yields a variety of clinical data concerning scoliosis and other severe spinal deformities for study advancing the field.

Dr. DeWald is internationally recognized for his 1967 development of the halo hoop, a means of skeletal traction to correct severe scoliotic deformities and pelvic tilts. This external brace is identified as a significant worldwide contribution to orthopedic surgery.

Knox/Rush Student Publishes in The Lancet

David J. Fletcher, first-year student in the Rush/Knox medical program and hard-skating Center for Knox College's hockey team, has an auspicious start on his medical bibliography. Monitoring and investigating the physical findings on himself and his teammates have earned the results of his research a place in England's well-known medical weekly, *The Lancet*.

During an assignment for the pathophysiology course at Knox, Fletcher found blood cells and protein casts in his own urinalysis to be grossly abnormal and suggestive of renal disease. Concern for his condition led him to consult local physicians, but he refused hospital workup because of the hockey team's schedule. Besides, he felt fine.

Plagued by doubt, however, he discussed the situation with Robert E. Johnson, M.D., coordinator of the Rush/Knox program. No stranger to athletic stress, Dr. Johnson recognized Fletcher's findings as corresponding to pseudonephritis, a benign condition which occurs with strenuous activity and simulates renal disease. At Dr. Johnson's suggestion, Fletcher ran a timed study on his hockey teammates, which confirmed the symptoms in all of them. The condition is reversible within 24 to 48 hours after cessation of strenuous exercise.

After appearance of the article, Fletcher was contacted by physicians curious whether the condition might not also persist in blue-collar physical laborers. He plans to find the answer and also to conduct studies on runners.

Fletcher concludes, "Before diagnosing the serious renal disease, the clinician should consider the possibility of athletic pseudonephritis, keep the patient quiet for at least 48 hours, and then examine the urine again."

Study Role of Nicotine in Thrombosis and Vascular Disease

Francois M. Booyse, Ph.D., from the Department of Biochemistry, was recently awarded $220,000 by the Council for Tobacco Research, U.S.A., to study the effect(s) of nicotine-tertrate on endothelial cell biochemistry and function, the vessel wall, platelet-vessel wall subendothelium interactions, and synthesis of various coagulation factors and various aspects of platelet (human and rabbit) function and glycoprotein metabolism. "The purpose of these studies is to identify and define, at a molecular level, the role of nicotine in cigarette smoke-induced vascular disease and thrombosis. These studies will be carried out on the effect(s) of nicotine on the various components (cells, vessel wall, etc.) that interplay to maintain normal hemostasis."

The project is expected to last 3 years and will involve studies on cultured endothelial cells, rabbits, rhesus monkeys, and supplemental analysis of platelet biochemistry and function in volunteer human smokers and nonsmokers.

The award is intended as a supplement to existing ongoing research on various aspects of thrombosis being conducted by Dr. Booyse and his research in the Department of Biochemistry. Dr. Booyse's research is currently funded by NIH, Chicago and Illinois Heart Association, the Clow Foundation and the Illinois Federation of Women's Clubs.

Tooth Implants

Dental implants to anchor bridges for patients lacking rear teeth have been successfully achieved by Marvin Weiss, D.D.S., visiting professor at Rush and Professor Emeritus at the University of Illinois School of Dentistry, in collaboration with Jorge Galante, M.D., Chairman of Orthopedics, and William Rostoker, Ph.D., biomedical engineer, at Rush-Presbyterian-St. Luke's Medical Center.

Used in the project was the titanium mesh developed by Drs. Galante and Rostoker for bone replacements in orthopedic problems.

Tested first in dogs, later in

baboons, "successful single tooth implants function and appear indistinguishable from natural teeth," says Dr. Weiss. "Three implants" have been "in function for more than three years, and more than 50 implants in function for more than two years. There is a much larger number of uncrowned implants in baboons which are still retained in healthy condition." Human volunteers for further testing were then sought.

X-ray of implant supporting bridge at time of insertion

Same bridge two years later

"In humans," Dr. Weiss observes, "the large majority of bridge abutments have performed satisfactorily . . . most of these are two years old. Patients have experienced no discomfort either immediately after surgery or during the subsequent function of the bridge. The gingival tissue surrounding the post has been healthy in every case, probably because of the emphasis on a disciplined program of oral hygiene.

"The titanium mesh—four millimeters in diameter—is fitted tightly into the patient's jaw. Within a week the soft tissue is healed and sutures removed. After four weeks, impressions are made for a conventional crown to fit on the smoothly polished implant."

Dr. Weiss, who is currently working on a U.S. Army contract at Rush-Presbyterian-St. Luke's Medical Center, began the project in 1969 when it was jointly funded by the Army and the National Institutes of Health. Dr. Weiss says his volunteer program has been eminently successful and that they have sufficient volunteers at this time.

"The technique," he believes, "should be well within the skills of the average general practitioner."

Cartwright Named Chairperson, Department of Psychology and Social Sciences

Rosalind Dymond Cartwright, Ph.D., a nationally recognized research scientist in sleep disorder research, has been appointed chairperson of the Department of Psychology and Social Sciences, College of Health Sciences, Rush-Presbyterian-St. Luke's Medical Center.

The Department of Psychology and Social Sciences includes psychologists, sociologists and other social scientists. It focuses on basic sciences and clinical aspects of psychology, with the programs reflecting the role of the psychologist in a multi-disciplinary setting. The programs provide clinical, academic and scientific training for the professional psychologist. Faculty of the department are primarily involved in providing behavioral science education to all students of the Medical Center.

Dr. Cartwright has been associated with the University of Illinois College of Medicine since 1962 and was the director of the Division of Psychology. Since 1969, she has served as professor of psychology at the University of Illinois Circle Campus and as professor of psychiatry, University of Illinois College of Medicine.

Dr. Cartwright is well-known for developing experimental approaches to psychotherapy research. More recently, her studies of the function and structure of dreams in the adult personality are substantial contributions to this new field of scientific endeavor. Her recently published book *Night Life: Explorations in Dreaming* and a new book *A Primer on Sleep and Dreaming* (to be published in the fall, 1977) have influenced significantly the developing theories explaining the role of sleep in adjustment.

Dr. Cartwright has held offices with the American Psychological Association and the Association for the Psychophysiological Study of Sleep. She also has served as a Research Review Panel Member for Clinical Research of the National Institute for Mental Health and as an editorial board member for several professional journals.

Dr. Cartwright plans to establish joint efforts with the neurology, pediatric, pharmacology and psychiatry department in development of a sleep disorder clinic at Rush-Presbyterian-St. Luke's.

A graduate of the University of Toronto, Dr. Cartwright received the Ph.D. degree in psychology from Cornell University. She has served in numerous administrative and academic positions with Cornell University, Mount Holyoke College, the University of Chicago and the University of Colorado.

Alumni Bulletin

Alumni Association of RMC Honors Past and Present Graduates

Two generations of Rush Medical College graduates were honored at this year's Pre-Commencement Banquet as the Class of 1977 was inducted into the Association and the Class of 1927 celebrated their 50-year reunion.

Master of Ceremonies at the banquet was R. Gordon Brown, M.D., '39, President of the Alumni Association and a Trustee of the Medical Center. Dr. Brown welcomed the graduates as the newest members of the Association and commended their families "for the love, encouragement, and sacrifices which have brought them to such a significant point."

James A. Campbell, M.D., further welcomed the group: "We would like to commend all of you, Class of '77, to your immediate predecessors of 50 years. It has been my pleasure to meet with the Class of '27 off and on through the day, and I can tell you, if you young alumni can have as much fun living life, practicing medicine, and taking care of patients as the Class of '27 has, I think you are in for a fine future. I would also like to again thank all of the parents who have made this possible."

George Nicola, M.D., '37, introduced W. Drew Chipman, M.D., a representative of the Class of 1927. Dr. Chipman addressed the graduates, saying that he has always been proud and complimented by being a Rush graduate. "Rush doctors are known to be among the best doctors, dedicated doctors, honest and conscientious doctors. You're being graduated from a truly great medical school, and you are expected to practice the highest standards of ethical medicine."

The Dean's Presentation of the Class of 1977 was made by Leo M. Henikoff, M.D., Vice President, Medical Affairs, and Dean, Rush Medical College (acting). Dr. Henikoff reminded the graduates that while there is some magic that goes into the making of a physician, Rush has provided them with the important parts of education that they will build on for the rest of their careers. He also noted that just as the students had come to Rush from many parts of the country, they will now be going to different areas to "perpetuate the concern for patients and quality of care that has made the name of Rush what we all understand it to be."

R. Joseph Olk, M.D., '75, Vice President of the Alumni Associ-

At pre-commencement banquet were left to right, Hans W. Lawrence, M.D., ('27), Mrs. James W. Shaw, James W. Shaw, M.D., ('27), admiring the 50-year alumni pin, and Paul C. Doehring, M.D. ('27).

ation of RMC and a Trustee of the Medical Center, welcomed the 1977 graduates to the Association, adding that they can now share in the 140-year Rush tradition of excellence and distinguished service. Dr. Olk also encouraged the graduates to keep in touch with the Alumni office and to support the Alumni Association through their attendance and financial contributions. He asked the graduates "to encourage highly qualified and dedicated students to consider Rush when choosing a medical, nursing, or health sciences college."

Speaking on behalf of the Trustees of the Medical Center was B.A. Bridgewater, Jr., Chairman of the Alumni Leadership Subcommittee. Mr. Bridgewater discussed the health care environment into which the Class of 1977 is graduating, encouraging them to become informed about the relationship between practicing medicine and the regulation of health care. He said that they can do so by raising questions about the basic assumptions considered by the government and regulatory agencies when shaping the issues of national health care. Mr. Bridgewater also emphasized the need for the future physicians to review the criteria used in the current debate on health care costs.

B. A. Bridgewater, Jr.

Prior to the Pre-Commencement Banquet, the Alumni Association's annual meeting was held in Room 600. The officers and executive council were announced and progress reports and plans for the upcoming year were presented. Alumni also attended a series of symposia held in the Academic Facility on June 10 and 11.

On Commencement day, old and new alumni were together again, as the Class of 1927 joined the 1977 graduates, marching in cap and gown as they had done 50 years ago.

Stanley Monroe, M.D. ('36), and William F. Hejna, M.D., Senior Vice President, Rush-Presbyterian-St. Luke's Medical Center.

Beatrice E. Tucker, M.D., Is Distinguished Alumna

The 1977 Distinguished Alumna Award was presented to Beatrice Edna Tucker, M.D. ('22), "in recognition of a career of service and leadership in patient-centered medicine and advancement of community health." The award was presented to Dr. Tucker at the Pre-Commencement Banquet on June 10, sponsored by the Alumni Association of Rush Medical College.

In presenting the award, Terrold Butler, M.D. ('76), said of Dr. Tucker: "She is a lady who believes in firsts. She was the first woman intern to be appointed to Evanston Hospital, and later, was the first female resident in obstetrics at Chicago Lying-In Hospital. She was molded in the Rush tradition. She cares, and is a doer. She allows her actions to speak to her dedication and conviction to a profession and to the people she serves. She has embellished the name of Rush and has been an excellent ambassador to what Rush stands for and for what Rush is. She is truly the first lady of Rush."

Beatrice E. Tucker, M.D., recipient of the 1977 Distinguished Alumna Award, is congratulated by James A. Campbell, M.D., President of the Medical Center, and Terrold Butler, M.D. ('76).

The night of June 10 represented another first for Dr. Tucker. She is the first woman to receive the Distinguished Alumnus Award of the Alumni Association of Rush Medical College.

The "first lady of Rush" may also be called the first lady of the Chicago Maternity Center. In 1932, after her residency at Chicago Lying-In Hospital, Dr. Tucker became medical director of the Center, a position she held for more than 40 years. Since 1895, the Center, formerly called the Maxwell Street Dispensary, has provided assistance to those whose babies are delivered at home. The Center offers both prenatal and postpartum care, and has been invaluable to those underprivileged families whose financial constraints sometimes prevent hospitalization. During her 41 years as medical director of the Chicago Maternity Center, Dr. Tucker presided over more than 100,000 births. Under her direction, the Center also provided residents, medical students, and nurses with valuable training in delivering babies under the most adverse conditions. The patient's home is the maternity hospital in most cases handled by the Chicago Maternity Center, and so the doctors go where the mothers are. For Dr. Tucker, this often meant climbing dark and shabby staircases in ghetto apartments, sometimes braving rain or snowstorms to reach a patient. Sleep was often a luxury for Dr. Tucker, since babies come at all times of the day and night.

During her years of involvement in home delivery, Dr. Tucker also conducted clinical research studies regarding the effect of management of labor and delivery on infant and maternal mortality and on the future development of the child. On her retirement from the Center in 1973, Dr. Tucker was appointed emeritus medical director, leaving behind a 41-year foundation of patient-centered medicine and dedication to community health.

Alumni Association of RMC Announces Elected Officers

The Alumni Association of Rush Medical College held its annual meeting at a noon luncheon on Friday, June 10, at the Medical Center. The announcement of the newly elected officers of the association—led by R. Gordon Brown, M.D., as president and R. Joseph Olk, M.D., as vice president—and renewed efforts for alumni activities and involvement highlighted the presentations to alumni at the meeting.

In his greeting to the alumni, James A. Campbell, M.D., president of Rush-Presbyterian-St. Luke's Medical Center, had a special welcome for the 50-year alumni and others who came long distances to attend. Dr. Campbell also mentioned his own recent travels to visit alumni at regional meetings and the interest in Rush and its students that he found among the alumni. Leo M. Henikoff, M.D., acting Dean of Rush Medical College, gave a profile of these students, especially this year's graduates. He emphasized their diverse backgrounds, together with their common commitment as the next generation of physicians in the Rush tradition.

Frederic A. de Peyster, M.D., chairman of the Alumni Association Nominating Committee, announced the results of the recent election of officers, including the six new and fourteen continuing members of the association's Executive Council. The new members are Eloise Parsons Baker, M.D. ('25), Terrold Butler, M.D. ('76), George Callahan, M.D. ('26), Ruth Campanella, M.D. ('74), Edward Judd, M.D. ('37), and Steven Sicher, M.D. ('75). Dr. de Peyster emphasized the broad representation both of "old" and "new" Rush and of different areas of the country that the Executive Council now has.

Dr. Brown reported on the increased alumni involvement in the association and Rush—through an increased flow of information, through new alumni regional meetings, and through an increase in alumni philanthropy. He emphasized the goal of raising over $20 million in the next four years for endowment for Rush—to assure Rush's

Wayne W. Wong, M.D. ('40), and George A. Nicola, M.D. ('37), participated in Commencement ceremonies.

Alumni of Rush Medical College joined the graduates, faculty, and trustees of the Medical Center at Commencement. Pictured are, left to right, James C. Ellis, M.D. ('27), Hans W. Lawrence, M.D. ('27), Edward McCormick Blair, Chairman of the Trustees, Jessie M. Bierman, M.D. ('27), James A. Campbell, M.D., President of the Medical Center, W. Drew Chipman, M.D. ('27), George A. Nicola, M.D. ('37), and James W. Shaw, M.D. ('27).

future and its place in American medical education. Dr. Olk reported that the trustees of the Medical Center stand ready to assist the Alumni Association in its efforts, especially through the Alumni Leadership Subcommittee, chaired by Mr. B.A. Bridgewater, Jr., Executive Vice President and Director of Baxter Travenol Laboratories, Inc. Dr. Olk, one of the members of this subcommittee along with Dr. Brown and Wayne W. Wong, M.D. ('40), spoke to the alumni about the subcommittee's and the association's commitment to Rush's continued growth and vitality.

Homecoming Tea and Banquet for Nursing Alumni

The annual Homecoming Tea and Homecoming Banquet of the Rush-Presbyterian-St. Luke's Nurses Alumni Association were held in the spring. Special guests at these two events were twenty 50-year alumni—fifteen from the 1927 class of Presbyterian Hospital School of Nursing, and five from the 1927 class of St. Luke's Hospital School of Nursing.

Joyce Stoops, R.N., President of the Alumni Association, presented two Distinguished Service Awards at the Alumni Tea. Martha Mills, R.N., and Dorothy Hughes, R.N., were both cited for their continued service and devotion to the Alumni Association.

The newest members of the Rush-Presbyterian-St. Luke's Nurses Alumni Association, graduates of the 1977 class of the College of Nursing, were guests at a champagne brunch held on June 9. Special guests at the brunch included James A. Campbell, M.D., President of the Medical Center; Luther P. Christman, Ph.D., R.N., Vice President, Nursing Affairs, and Dean, College of Nursing; Sue T. Hegyvary, Ph.D., R.N., Associate Dean of Medical Sciences and Services, College of Nursing, and Assistant Vice President for Nursing Affairs; and JoAnn Jamann, Ph.D., R.N., Associate Dean of Community and Geriatric/Gerontological Sciences and Services, College of Nursing, and Assistant Vice President for Nursing Affairs. Ruth E. Johnsen, R.N., A.M., member of the Board of Directors of the Alumni Association and Director of Admissions, College of Nursing, presented a history of the hospitals and nursing schools that are the foundation of the Rush-Presbyterian-St. Luke's Nurses Alumni Association.

he Class of 1927—Presbyterian Hospital School of Nursing.

The Class of 1927—St. Luke's Hospital School of Nursing.

Susan Williger Is Outstanding Nurse Graduate

James A. Campbell, M.D., and Susan Williger, recipient of the Rush-Presbyterian-St. Luke's Nurse Alumni Association Award.

Susan Williger, a 1977 graduate of the Rush University College of Nursing, received the Rush-Presbyterian-St. Luke's Nurse Alumni Association Award, given to the outstanding nurse graduate. The award was presented to Ms. Williger by Joyce Stoops, president of the Association, at the Honors Assembly on Commencement morning. In presenting this award, Ms. Stoops said, "While at the College of Nursing, Susan distinguished herself by her outstanding academic and clinical performance. She has been most enthusiastic in her pursuit of extracurricular activities and has initiated and coordinated a buddy system for new nursing students at the College of Nursing. She has also been one of the student leaders in establishing the Student Nurses Association of Rush University and has actively participated in their program planning."

A personal interest which Susan has been pursuing is clinical nutrition. "This is one area I really love," said Susan. "I had taken some of the graduate clinical nutrition courses as an undergraduate, and decided to continue in the field of clinical nutrition."

This fall she will be entering the College of Health Sciences, Rush University, to pursue a Master's Degree in clinical nutrition. "A real, big part of living is food. By controlling your diet, you have the best chance of avoiding chronic diseases and enjoying the food you are eating. Ethnic and religious considerations are important when controlling your diet — a community nurse in clinical nutrition needs to be aware of these individual considerations of a patient."

Golden Lamp Society

The Golden Lamp Society of Rush-Presbyterian-St. Luke's Medical Center is a group that was formed to recognize those nurse alumni whose active and abiding interest in high-quality patient care is directed toward increasing the potential of nurses to serve humanity.

The commitment to nursing education at the Medical Center dates back to 1885, when St. Luke's Hospital School of Nursing was founded. In 1903, Presbyterian Hospital established a nursing school, and when the two hospitals merged in 1956, the Presbyterian-St. Luke's Hospital School of Nursing was formed and carried on the tradition of excellence that had characterized the two institutions individually. In recognition of the need for collegiate education for nurses and the need to enlarge the scope of their education, the opening of the College of Nursing in 1972 further signified the Medical Center's dedication to high-quality nursing education.

The College of Nursing provides educational programs totally integrated into the health care delivery system of the Medical Center. As a vote of confidence in the nursing school, the nurse alumni of all three former schools of nursing have joined together to form the Golden Lamp Society to aid in providing support and stability for the College of Nursing.

Contributions, pledges, and bequests will be used exclusively by the College of Nursing in the areas of scholarships, faculty salaries, and nursing research as recommended by the Dean of the College of Nursing and approved by the Executive Committee of the Society. The Golden Lamp Society strives to maintain the tradition of high-quality nursing education upon which the College of Nursing was founded.

Giving Life Insurance

A review of your estate may make desirable a gift to Rush-Presbyterian-St. Luke's Medical Center of the proceeds of a life insurance policy. One popular reason for a gift of life insurance is that such an arrangement guarantees that the person's full philanthropic intentions will be carried out. Payment of annual premiums on a new life insurance policy on your or someone else's life with the Medical Center as beneficiary is one way of assuring a significant gift while leaving the rest of your estate intact. The proceeds of such a policy pass directly and immediately to the Medical Center outside of any legal or tax considerations on the estate.

There are two kinds of arrangements for a life insurance gift: 1. The proceeds are made payable to the Medical Center at the time of the donor's death, with the donor retaining all the "incidents of ownership" (such as the ability to borrow on the policy) during his or her lifetime. 2. The donor makes a gift of the policy itself, with all "incidents of ownership" to the Medical Center in his or her lifetime. Under either arrangement, the total amount of the gift is excluded from estate tax upon the death of the donor. The income tax implications, however, differ. Under the first, no income tax deductions are allowable on the premium paid by the donor, since the donor still "owns" the policy. However, if the donor makes a gift of the policy itself, an income tax deduction will be allowed on each premium paid.

With the donation of an *existing* policy, there is also a significant income tax deduction for the value of the policy at the time of the gift. A five-year carryover allowance also applies to this type of deduction.

For further information on this and other forms of planned giving write or call:

The Office of Estate Planning
Office of Philanthropy and
Communication
Rush-Presbyterian-St. Luke's
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1753 Congress Parkway
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